

A taxonomic revision of Araceae tribe Potheae (*Pothos*, *Pothoidium* and *Pedicellarum*) for Malesia, Australia and the tropical Western Pacific

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Abstract

Boyce, P.C.¹ and Hay, A.² (¹Herbarium, Royal Botanic Gardens, Kew, Richmond, Surrey, TW9 3AE, U.K. and Department of Agricultural Botany, School of Plant Sciences, The University of Reading, Whiteknights, P.O. Box 221, Reading, RG6 6AS, U.K.; ²Royal Botanic Gardens, Mrs Macquarie's Road, Sydney, NSW 2000, Australia) 2001. A taxonomic revision of Araceae tribe Potheae (*Pothos*, *Pothoidium* and *Pedicellarum*) for Malesia, Australia and the tropical Western Pacific. *Telopea* 9(3): 449–571. A regional revision of the three genera comprising tribe Potheae (Araceae: Pothoideae) is presented, largely as a precursor to the account for Flora Malesiana; 46 species are recognized (*Pothos* 44, *Pothoidium* 1, *Pedicellarum* 1) of which three *Pothos* (*P. laurifolius*, *P. oliganthus* and *P. volans*) are newly described, one (*P. longus*) is treated as insufficiently known and two (*P. sauderianus*, *P. nitens*) are treated as doubtful. *Pothos latifolius* L. is excluded from Araceae [= *Piper* sp.]. The following new synonymies are proposed: *Pothos longipedunculatus* Ridl. non Engl. = *P. brevivaginatius*; *P. acuminatissimus* = *P. dolichophyllus*; *P. borneensis* = *P. iusignis*; *P. scandens* var. *javanicus*, *P. macrophyllus* and *P. vrieseanus* = *P. junglulunii*; *P. nunplii* = *P. tener*; *P. lorispachus* = *P. leptostachyus*; *P. kinabaluensis* = *P. longivaginatius*; *P. merrillii* and *P. ovatifolius* var. *simalurensis* = *P. ovatifolius*; *P. sumatranus*, *P. korthalsianus*, *P. inaequalis* and *P. jacobsonii* = *P. oxyphyllus*. Relationships within *Pothos* and the taxonomic robustness of the satellite genera are discussed. Keys to the genera and species of *Pothoeae* and the subgenera and supergroups of *Pothos* for the region are provided. All species are illustrated.

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Introduction

The tribe *Pothaeae* (sensu Mayo et al. 1997) is a palaeotropical and palaeosubtropical assemblage of three very similar, possibly inseparable, predominantly forest-dwelling root-climbing lianescent genera. Besides *Pothos* L. (the largest genus, with 56 species), the other genera, both unispecific, are *Pothoidium* Schott and *Pedicellarum* M. Hotta. The tribe is the only Old World member of the subfamily Pothoideae, which otherwise includes neotropical *Anthurium* Schott, the largest genus in the Araceae.

Pothos species are subtropical and tropical and distributed from Madagascar to Western Oceania (east to Vanuatu), and China (north to Hubei) to Australia (south to eastern Queensland and eastern New South Wales). The most species and greatest morphological diversity are met with in Indomalesia and concentrated on Borneo. *Pedicellarum* is endemic to Borneo; *Pothoidium* is distributed through Maluku, Sulawesi and the Philippines.

Linnaeus (1753, 1763) treated *Pothos* as a genus of climbing aroids with bisexual flowers. Subsequently many climbing (and some non-climbing) aroids were included to form a widely heterogeneous assemblage. Early in the 19th century Schott recognized that *Pothos* was 'unnatural' as then defined, and in a series of papers (Schott 1832, 1856–1857, 1860) redefined bisexual-flowered aroid genera, at the same time erecting *Pothoidium* (Schott 1857). The modern circumscription of *Pothos* is essentially that of Schott.

Schott (1856–1857) established two subgenera, *Pothos* ('*Eupothos*') and *Allopothos* based on branching architecture, leaf shape and inflorescence presentation. Engler (1905) further subdivided Schott's subgenera (calling them sections) into seven series based on inflorescence and flowering shoot characters. While accepting Schott's subgenera, no attempt is made here to formally follow Engler's series as there is rather little overlap between that classification and ours. However, *Allopothos* (sensu Engler) comprises two distinct groups, those with a spadix of congested flowers (here termed the '*Allopothos* supergroup') and those with scattered flowers (the '*Goniurus* supergroup'). Recognition of these at an informal level is convenient for the purposes of aiding identification. Current molecular work by P.B. may illuminate whether or not these groups are natural.

The last full revision of *Pothos* and *Pothoidium* was that of Engler (1905). Since then several regional reviews have been published (e.g., Li 1979; Sivadasan 1982; Nicolson 1988). This is the third paper in a series intended to complete an alpha-taxonomy of the genus. Revisions of the species for New Guinea, Solomon Islands and Australia (Hay 1995) and Thailand and Indochina (Boyce 2000) have been published and others are being prepared for each of India and the western Himalaya, and Madagascar.

Life form and shoot architecture

All species of *Pothaeae* are root-climbers (sensu Schimper 1903). Although they are frequently referred to as epiphytes on herbarium labels, no species is yet known to be a true epiphyte. However, it is nearly impossible to ascertain whether the plants remain in contact with the ground throughout their life cycle or whether for at least some of the time they lose contact with the ground, i.e. that they are hemi-epiphytes (see Croat 1990: 11; Putz & Holbrook 1986). Part of the problem with life-form observations is that it is seldom easy to trace a mass of interlaced adherent stems back to a single source of ground contact and virtually impossible to ascribe the points of ground contact to a particular time in the plant's development.

Mature plants of *Pothos* display an at times bewildering range of shoot architecture. To date very few field observations have been made but from what has been done it is clear that some potentially useful systematic characters are present. *Pothos scandens*, *P. grandis* (subgen. *Pothos*), *P. insignis*, *P. ovatifolius* ('*Allopothos* supergroup') and *P. curtisii* ('*Goninrus* supergroup'), are the only species for which tolerably comprehensive shoot architecture observations exist and from which the following summary can be made.

In common with many *Araceae* lianes (see Schimper 1903: 193), species of tribe *Pothaeae* display temporal and spatial differentiation of shoot function with corresponding phases of shoot architecture (see Blanc 1977a & b, 1978, 1980). All five *Pothos* species investigated (and *Pothoidium* and *Pedicellarum*) have at least five phases of shoot architecture (Fig. 1). A sixth, reiterative phase has been observed in some species.

1. On germination (Fig. 1A) a monopodial leafless (minute cataphylls present) thread-like, shade-seeking (skototropic; see Strong & Ray 1975) creeper (eocaul) is produced.
2. Once this shoot begins to climb (Fig. 1B) a monopodial, leafy (shingling or not; see Madison (1977) and Boyce & Poulsen (1994)), juvenile phase develops.
3. This in turn (Fig. 1C) leads to a monopodial, leafy, adherent sterile mature phase.
4. Sympodial, usually free, fertile shoots arise from the sterile mature phase (Fig. 1D).
5. Both mature sterile and fertile shoots can give rise (Fig. 1E) to a terminal extension consisting of a monopodial foliage-leafless flagelliform foraging shoot whose function appears to be to propagate the individual vegetatively by seeking and colonizing suitable climbing surfaces. These foraging shoots can arise in a variety of positions but are most often seen at the tips of free or adherent branches.
6. A reiteration phase may invigorate the plant by re-enacting phases 3 and 4.

These phases are described in more detail below. Preliminary investigations of *Pothos* shoot architecture can be found in Boyce & Poulsen (1994), Boyce & Nguyen (1995), Boyce & Hay (1998) and Boyce (2000).

Establishment — phases 1 and 2

The eocaul is capable of extending for a considerable distance along the forest floor and although the green stem is presumably capable of photosynthesis, at least in the initial stages it appears to depend partly on food reserves in the large seeds. Field observations suggest that the function of the eocaul is to locate a climbing host on which to establish juvenile shoots. It is apparent that once this function is satisfied the eocaul soon withers. The question is unanswered whether the eocaul always dies before the juvenile shoot sends down feeder roots and re-establishes contact with the ground or whether there is a period when the plant is separated from the ground.

If the latter, then many *Pothos* species should be classed as secondary hemi-epiphytes (see Putz & Holbrook, 1986).

Once a suitable vertical surface is encountered, the shoot alters its mode of growth and attaches itself to the substrate by means of short clasping roots arising from either the nodes or internodes; it can therefore be termed a root-climber (see Schimper 1903). At this stage the juvenile shoot also begins to produce foliage leaves. In *P. scandens* and *P. grandis* (subgen. *Pothos*) these are similar to adult leaves in appearance, although more congested and smaller; these species are thus homeophyllous. *Pothos curtisii* and *P. ovatifolius* (subgen. *Allopothos*) produce a juvenile root-climber with sub-orbicular imbricating leaves arranged in the manner of the tiles or shingles of a roof ('shingle-climber') and of very different appearance to leaves produced later in the life cycle; these species are thus heterophyllous. Mode of establishment is not known for *P. insignis* (subgen. *Allopothos*).

Subsequent growth and maturation — phases 3 and 4

Initially all branches produced are adherent. In all species observed, growth can continue in this manner for a considerable time, the adherent shoots climbing high into the canopy (where conditions permit), giving rise to branches from older lower portions, but usually not branching distally unless the shoot tip is damaged. These adherent stems are referred to as 'mature sterile' in the descriptions to follow. In *P. scandens* and *P. grandis*, by the time the plant has reached 2–3 m in height, non-adherent irregularly sympodial (i.e. terminating without flowering) side branches have usually begun to develop. These branches are plagiotropic, often repeatedly branching to form extensive curtains of foliage pendent under their own weight, and are referred to here as fertile shoots. It is from the leaf axils of these plagiotropic branches that the flowering shoots arise. The juvenile stage of *P. curtisii* behaves similarly to that of *P. scandens*, the major difference being that the shingle growth is of limited duration (usually climbing to no more than 3 m, often considerably less) before the plant abruptly begins producing leaves of the adult form. That transformation is often accompanied by extensive branching, with both adherent and free shoots arising, and the plant often comes to form a mass of interlacing branches ('hammock'). *Pothos ovatifolius* conforms to the basic pattern but needs to reach a far greater height before the onset of the production of flowering shoots; it is seldom found in flower lower than 5 m, and frequently reaches the tops of tall trees (20 m +) before the onset of flowering.

Foraging — phase 5

The sterile mature phase occasionally transforms terminally into a foraging flagellum with a few leaf-like cataphylls and reduced foliage-leaves at first but soon becoming naked with slightly prominent nodes up to 10 cm distant. This stem forages for several metres until a suitable climbing surface is encountered and does not branch unless damaged apically when it then branches from the nearest healthy node. The foraging stem occasionally roots sparsely from the nodes but always roots prolifically on resumption of the climbing habit. Occasionally fertile mature shoots transform terminally into a foraging flagellum.

Reiteration — phase 6

A possible sixth phase, a modified version of the sterile mature growth, has been observed in *P. scandens*, *P. macrocephalus*, *P. repens*, *P. chinensis* and *Pothoidium lobbianum*. In these species (and undoubtedly others also) the sterile mature growth phase occasionally produces enormously robust lateral branches in which the leaves, while of conventional shape and size, are tightly imbricated and not spreading. These branches are also notable for the mass of adherent roots that arise from them. The

factors triggering this modified growth phase are not known. It might represent another form of foraging shoot and based on observations of *P. repens* in Vietnam, Boyce & Nguyen (1995) speculated that these reiteration shoots might serve as a means to rejuvenate ageing plants in which the quantity of high-climbing stems had become too great for the functioning root mass.

Architectural differentiation between subgenera of *Pothos*

Main architectural patterns are shared between the genera of *Potheae* and the subgenera of *Pothos*. However there is some incomplete architectural differentiation of the subgenera of *Pothos*.

Subgenus *Pothos*

All species investigated (*P. scaudens*, *P. repens*, *P. lougipes*, *P. chinensis*, *P. grandis*) pass through an eocaul phase. While the eocaul is not known for all species in the subgenus, for those where it is known it alters into a climber with closely arranged or nearly overlapping leaves of much the same shape as those of the mature growth phases. The eocaul phase appears to be monopodial but also produces simple branching systems by reiteration (sensu Hallé et al. 1978). The transition between the seedling and sterile mature phases is gradual with leaves becoming progressively larger. The mature sterile phase is a densely leafy, later naked, appressed monopodial climber rooting copiously from the nodes. The sterile mature growth phase does not branch terminally unless damaged whereupon it reiterates from a node usually some distance back from the damaged apex.

At some point the sterile mature phase begins to produce fertile mature shoots from lateral buds in the leaf axil. These fertile shoots are sympodial, of varying determinate lengths, and often branch to several orders from lateral buds. They are generally moderately leafy, later becoming naked below. Fertile mature shoots eventually produce much-abbreviated lateral shoots consisting of a minute prophyll and one to several cataphylls and terminate in one to several sequential or more or less synchronously produced inflorescences.

Subgenus *Allopothos*

Once a climbing surface is reached by the eocaul all but one (*P. brassii*) species of this subgenus investigated produce a distinctive shingle climber bearing ovate to lanceolate, almost sessile, distichously arranged leaves overlapping in the manner of roof tiles. This phase is closely attached to the substrate by roots arising from the nodes and occasionally produces geotropic feeder roots that reach the ground. The shingle phase eventually undergoes an abrupt transformation when adult leaves are produced with long petioles and lanceolate to elliptic laminae. The sterile mature shoots continue growth and often branch repeatedly from the lower parts, especially in *P. luzonensis* (*Goniurus* supergroup). Sterile mature shoots are often scandent, rooting at distant nodes and occasionally form hammocks (extensively branched aerial stem masses) in the canopy. Eventually sterile mature stems branch from below the leaf (or node if the stem is already leafless), giving rise to sympodial fertile shoots. These fertile shoots, although initially produced from the mature sterile stem, later themselves give rise to new fertile (enrichment) shoots that are produced from post fertile portions, usually the older mid-portions, the whole structure eventually forming a much-branched system. Each plant may bear many such systems and each is capable of producing a succession of inflorescences. The length of these individual branches and the degree of leaf development varies between species groups.

Reproductive phase architecture and informal infrageneric classification

Architecture of the flowering phase is very variable in the Potheae, and we have used it here as the basis for a preliminary classification below subgenus level. Here we combine an outline of infrageneric classification with summarised descriptions of reproductive phase architecture. Although no molecular studies have been published as yet, such work is underway by the senior author (P.B.) that may test these groupings. The species represented in each group are listed below (species occurring outside the review region are in square brackets).

Subgenus *Potlios*

P. scandens group (*P. scandens*)

Solitary inflorescences are borne terminally on non-reiterating short lateral flowering shoots bearing cataphylls but no foliage leaves and arising in the axils of most leaves of a flowering branch. They flower synchronously and each fertile branch seems to function as an integrated compound inflorescence. Unispecific group with an Indo-West Malesian distribution (extending to Madagascar).

P. jungluhnii group (*P. clavatus*, *P. cylindricus*, *P. gracillimus*, *P. hellwigii*, *P. jungluhnii*, *P. longipes*, *P. macrocephalus*, *P. papuanus*, *P. versteegii*, *P. zippelii*), [*P. chinensis*, *P. gigantipes*, *P. grandis*, *P. hookeri*, *P. kerrii*, *P. pilulifer*]

Inflorescences few and irregularly positioned. All species have rather large scattered inflorescences that seem to function as separate 'flowers'. Fertile portion of spadix may either be sessile (*P. clavatus*, *P. gracillimus*, *P. hellwigii*, *P. papuanus*, *P. versteegii*, *P. zippelii*) or stipitate (*P. jungluhnii*, *P. grandis*, *P. gigantipes*, *P. kerrii*, *P. pilulifer*, *P. hookeri*, *P. macrocephalus*, *P. chinensis*). A geographically widespread group with species from northern Vietnam (*P. grandis*) to Papuaasia (*P. papuanus*).

P. repens group [*P. repens*]

Fertile shoots borne terminally or from several distal leaf axils on long plagiotropic or pendent sterile mature shoots. Central and north Indochina, southern China (including Hainan and Hong Kong).

Subgenus *Allopothos*

Allopothos supergroup

Spadix with congested flowers.

P. tener group (*P. tener*, *P. dolichophyllus*, *P. ovatifolius*, *P. leptostachyus*)

Inflorescences erect, large, carried on plagiotropic leafy (rarely on cataphyllary), shoots, arising from upper parts or tips of sterile mature stems. Widespread from Thailand through Malesia to the tropical western Pacific.

P. barberianus group (*P. atropurpurascens*, *P. barberianus*, *P. brevicaugatus*, *P. englerianus*, *P. kingii*, *P. lancifolius*, *P. longicaugatus*, *P. mirabilis*, *P. philippinensis*, *P. salicifolius*, *P. volaus* and *P. wallichii*), [*P. crassipedunculatus*, *P. thomsonianus*]

Inflorescences held beneath the shoot on deflexed peduncles or on long, arching peduncles. Disjunct between the Indian subcontinent and West Malesia.

P. oxyphyllus group (*P. brassii*, *P. brevistylus*, *P. inaequilaterus*, *P. laurifolius*, and *P. oxyphyllus*)

Solitary to few erect small inflorescences usually on foliage-leafless (or on leafy shoots). Disjunct between West Malesia and Australia. As well as being geographically disjunct, Australian *Potlios brassii* somewhat differs architecturally in only flowering

terminally on leafy shoots, although its inflorescences match well those of, e.g., *P. brevistylus*. Its inclusion here is very provisional.

***P. insignis* group** (*P. insignis*)

Pothos insignis is remarkable in producing inflorescences carried on greatly elongated robust orthotropic or diageotropic perennial clinging fertile shoots clothed with large inflated cataphylls and arising from lower, often leafless, parts of sterile mature stems. These shoots are interpreted here as a specialized type of synflorescence (see Boyce & Poulsen 1994). The fertile shoots are morphologically similar to the sixth vegetative shoot phase noted for subgen. *Pothos* and *Pothoidium*. This is an architecturally isolated group with no clear links to other groups. Borneo and Southern Philippines (Palawan).

***P. polystachyus* group** (*P. polystachyus*, *P. cuspidatus*, and *P. falcifolius*)

Inflorescences carried on a plagiotropic or pendent, sympodial, much branched ?perennial cataphylliferous branches. East Malesia.

***Goniurus* supergroup** (*P. beccariaanus*, *P. curtisii*, *P. luzouensis*, *P. uotleyaanus*, *P. oliganthus*), [*P. armatus*, *P. remotiflorus*]

Spadix with scattered flowers. Inflorescences carried on much abbreviated stems clothed in minute cataphylls and arising from the mid-parts (rarely the tips) of sterile mature stems. In *P. curtisii* these lateral shoots arise from beneath the leaf axil (or node) and are elaborated by sympodial branching into leafless, sometimes highly complex, compact or lax synflorescences bearing two to many inflorescences simultaneously, or sometimes single inflorescences in series. Synflorescences are usually borne along or at the end of leafy branches or, more rarely on older leafless parts of the stem. Disjunct between the Indian Subcontinent, West Malesia and the Philippines.

Pedicellarium

The *Goniurus* supergroup (and in particular *P. oliganthus*) is of interest since it forms a 'bridge' between *Pothos* and *Pedicellarium*. The floral characters used to maintain *Pedicellarium* (latrorse anther dehiscence, fused perigon elements and the presence of a 'receptacle' in *Pedicellarium*) all occur in various species of the *Goniurus* supergroup, although not all in one species. Considering the characters cited above, *Pedicellarium* would appear to belong in the *Goniurus* supergroup. [A combination for this species in *Pothos* was made by Grayum (1984: 64; 1992) but it was not effectively published].

It seems reasonable to suggest that either *Pedicellarium* should be merged into a somewhat expanded concept of *Pothos*, or species comprising the *Goniurus* supergroup should be removed from *Pothos* and merged with *Pedicellarium*. In the latter case, the generic name *Goniurus* C. Presl would have priority. A decision will be made in the light of molecular studies currently being carried out.

Pothoidium

Pothoidium has functionally unisexual spadices arranged seemingly in panicles and maturing sequentially. The structure of the fertile shoots is not yet clearly understood, however. It is possible that they are developed by the reduction of all the leaves of a leafy fertile shoot system to minute prophylls and cataphylls and that the panicle-like synflorescence is hence to be regarded as an aggregate structure. *Pothos repens* and *Pothoidium* are vegetatively almost identical. Depauperate flowering specimens of *Pothoidium* greatly resemble robust plants of *P. repens*. Interpretation of *Pothoidium* inflorescences suggests that *P. lobbianum* is functionally dioecious. 'Male' spadices have flowers with prominently visible anthers and an apparently sterile ovary. 'Female' spadices have flowers with a large unilocular fertile ovary and no stamens. Flowers of *Pothos* species are always bisexual with a trilocular ovary.

It is tempting to regard *Pothoidium* as a derived offshoot of subgen. *Pothos* in which functional dioecy has arisen. Nevertheless there is some geographical disjunction between *Pothoidium* (Moluccas, Sulawesi, Philippines, and Taiwan) and the putatively related species in subgen. *Pothos* (*P. repens*, northern Indo-China, SW China). The nature of the relationship of *Pothoidium* to *Pothos* may also be made clearer by current molecular studies.

Potheae

Potheae Engl. Nova Acta Acad. Leopold.-Carol. 39: 140 (1876) ('*Pothoeae*') & in A. & C. DC, Monogr. Phan. 2: 78–94 (1879) ('*Pothoeae*'); Engl. & Prantl, Nat. Pflanzenfam. T.2, Ab.3: 112–114 (1889); Engl. in Engl., Pflanzenr. 21 (IV.23B): 20 (1905) ('*Pothoeae*'); Mayo et al., Genera of Araceae, 98 (1997).

Subtribe *Pothineae* ('*Pothoinea*') Schott, Prodr. Syst. Aroid., 558 (1860); Engl. in A. & C. DC, Monogr. Phan. 2: 78–94 (1879).

Shrubby climbing herbs, with tough woody stems, main shoot monopodial, flowering shoots axillary or infra-axillary; leaves distichous; petiole sheath long and often broad, flattened and apically auriculate (reduced in *Pedicellarum* and *Pothos* '*Goniurus*'); flowers bisexual, rarely functionally unisexual, perigoniate, (2–)3-merous; tepals (4–)6, free or fused; stamens 6, free, pollen monosulcate; ovules 1 per locule, anatropous, stigma sessile, usually umbonate; embryo large, endosperm absent.

Distribution — Three genera, Madagascar to southern China, western Oceania and eastern Australia.

Key to genera

- 1a. Ovary 3-locular; locules 1-ovulate; flowering shoot with inflorescences always axillary or infra-axillary, if terminal then inflorescence solitary on a leafy shoot; flowers bisexual 2
- 1b. Ovary 1-locular; flowering shoots terminating in a branching system of spadices; flowers usually (always?) functionally unisexual **Pothoidium**
- 2a. Flowers sessile; tepals free, very rarely united **Pothos**
- 2b. Flowers pedicellate; tepals connate **Pedicellarum**

Key to subgenera and supergroups of *Pothos*

- 1a. Petiole lamina-like, without a sheath and with a slight apical articulation with the lamina, occasionally much reduced. Inflorescences arising in the leaf axils, rarely terminal on shoots subgenus **Pothos**
- 1b. Petiole sheathing for much of its length, conspicuously geniculate at the apex. Inflorescences mostly arising from below the leaf axils, or terminally on leafy shoots, rarely in leaf axils subgenus **Allopothos** 2
- 2a. Spadix with congested flowers arranged in a dense spiral **Allopothos** supergroup
- 2b. Spadix with scattered flowers arranged in a loose spiral **Goniurus** supergroup

Pothos

Pothos L., Sp. Pl. (1753) 968 & edn 2 (1763) 1373–1374, 1675; Schott in Schott & Endl., Melet. Bot. (1832) 21; Endl., Gen. Pl. 3 (1837) 239; Kunth, Enum. Pl. 3 (1841) 65–66; Schott, Aroideae (1856–1857) 21–25, t.31–56 & Gen. Aroid. (1858) 95 & Prodr. Syst. Aroid. (1860) 558–575; Engl. in A. & C. DC, Monogr. Phan. 2 (1879) 78–94; Benth. & Hook.f., Gen. Pl. 3(2) (1883) 999; Engl. & Prantl, Nat. Pflanzenfam. T.2, Ab.3 (1889) 113–114 & Nat. Pflanzenfam. Nachtr. 1 (1897) 58; Engl. in Engl., Pflanzenr. 21 (IV.23B) (1905) 21–44; Engl. & Prantl, Nat. Pflanzenfam. Nachtr. 3 (1908) 28; Mayo et al., Genera of Araceae (1997) 98–99, pl.5, 108, a. [— *Tapauava* Adanson, Fam. 2 (1763) 470, nom. superfl.] — Type: *Pothos scandens* L.

Goniurus C. Presl, Epimel. Bot. (1851, '1849') 244. — Type: *Goniurus luzonensis* C. Presl [= *Pothos luzonensis* (C. Presl) Schott].

[*Potha* O. Kuntze, Rev. Gen. 2 (1891) 742, orth. var.].

Small to very large, very slender to robust, probably rarely secondarily hemi-epiphytic (see Croat 1990: 11; Putz & Holbrook 1986), root-climbing, homeo- or heterophyllous, tough, fibrous lianes. *Shoots* usually clearly differentiated into adherent, physiognomically monopodial (see Boyce 1998, Boyce & Nguyen 1995, Boyce & Poulsen 1994, Boyce & Hay 1998, Boyce 2000, Hay 1995) non-flowering, and free, sympodial or physiognomically monopodial flowering shoots, often highly ramified, arising from the leaf axil (subgen. *Pothos*) or beneath it (subgen. *Allopothos*); seedling, where known, a cataphyll-bearing but otherwise leafless, photosynthesising thread-like eocaul; adult plants often producing flagelliform, leafless (cataphyll-bearing), skototropic, foraging shoots; juvenile plants sometimes shingle-leaved (subg. *Allopothos*; juveniles not described for most species); internodes (except at the beginning of branches) much longer than thick, nodes on free shoots occasionally bearing roots modified into spines. *Leaf blades* simple, entire, very narrowly lanceolate to broadly ovate, often asymmetrical (subg. *Allopothos*), with reticulate venation, the primary lateral veins on each side of the midrib traversed by one or more intramarginal veins running \pm from the base and from about midway along the midrib to the apex or first to the distal margins and then to the apex; petiole either with a narrow, \pm clasping sheath and a conspicuous apical articulation (subg. *Allopothos*), or broad, flattened and lamina-like with a small apical articulation (subg. *Pothos*), the leaf then resembling that of some *Citrus*. *Inflorescences* solitary (subgen. *Pothos*) or terminal on leafy branches (subgen. *Allopothos*), more usually arranged on lateral short shoots bearing cataphylls (subgen. *Allopothos*), these short shoots usually simple with a single inflorescence, sometimes elaborated by sympodial branching into usually leafless, sometimes highly complex, compact or lax synflorescences bearing two to many inflorescences flowering in series; synflorescences (if present) borne along or at the end of leafy branches, sometimes persisting on older leafless parts of the stem or sometimes arising there. *Spathe* mostly rather inconspicuous, ovate to lorate or greatly attenuate, opening wide and held away from the spadix, often fully reflexed, green to dirty white or yellow or deep purple. *Spadix* sessile or stipitate, tapering-cylindrical to spherical. *Flowers* bisexual, congested to scattered, with a perianth of usually 6, rarely 4, free tepals or the perianth completely united and the flowers sunken in pits on the spadix with the perianth resembling a centrally perforated operculum over the pit; stamens 6, rarely 4, with flattened filaments and extrorse anthers, thecae elongate to globose; ovary trilobular, the locules uniovulate, ovules anatropous on an axile placenta at the base of the septum; stigma punctiform, discoid-hemispheric or umbonate, mostly sessile. *Fruit* a 1–3-seeded berry ripening from dark green through yellow to variously red, individually distinct, very large relative to spadix; seeds large, exalbuminous, testa smooth; embryo macropodal. *Pollen* monosulcate, ellipsoid-

oblong, small [mean 21 μm , range 16–25 μm], exine foveolate to reticulate or subrugulate, the muri psilate or minutely tuberculate (Grayum 1984, 1992). *Chromosomes*: $2n = 24, 36$ (Petersen 1989).

Distribution — 56 species distributed from Madagascar to Vanuatu and from China (as far north as Hubei) to Australia (as far south as New South Wales). In *Malesia*: 37 species.

Habitat — Bole climbing, occasionally lithophytic, root-climbing lianes or rarely secondary hemi-epiphytes in low to upper-mid-elevation tropical or subtropical seasonal to perhumid evergreen forest.

Key to species

(including the species of *Pothoidium* and *Pedicellarum*)

- 1a. Petiole lamina-like, without a sheath and with a slight apical articulation with the blade, occasionally much reduced; inflorescences arising in the leaf axils, rarely terminal on shoots 2
- 1b. Petiole sheathing for much of its length, conspicuously geniculate at the apex; inflorescences mostly arising from below the leaf axils, or terminally on leafy shoots 13
- 2a. Inflorescences several to many, borne in a terminal branching system on either the primary or subsidiary tips of long pendent shoots, lower inflorescences axillary to a foliage leaf, upper ones either subtended by cataphyll or without subtending leaf. Maluku, Sulawesi, Philippines **43. Pothoidium lobbianum**
- 2b. Inflorescences solitary in the leaf axil, rarely terminal on leafy shoots 3
- 3a. Spadix stipe sharply bent at anthesis, fertile portion of spadix held adjacent to peduncle. Malay Peninsula to Philippines **1. Pothos scandens**
- 3b. Spadix stipe \pm straight at anthesis 4
- 4a. Petiole less than one sixth of the length of the blade. New Guinea **7. Pothos versteegii**
- 4b. Petiole over one quarter of to exceeding the length of the blade 5
- 5a. Spadix \pm spherical 6
- 5b. Spadix ovoid to cylindrical 9
- 6a. Spadix sessile 7
- 6b. Spadix long-stipitate 8
- 7a. Apex of peduncle abruptly expanded at union with spadix. West New Guinea **2. Pothos clavatus**
- 7b. Peduncle gradually thickened along its length. New Guinea, Bismarck Archipelago, Solomons **4. Pothos hellwigii**
- 8a. Petiole greatly exceeding the blade; inflorescences arising at all but the basal-most leaf axils of flowering branch; peduncle orange-yellow, stipe pale green and the spathe white. Sumatera (Riau), Thailand (Yala & Narathiwat), Peninsular Malaysia **6. Pothos macrocephalus**
- 8b. Petiole shorter than to equalling the blade; inflorescences arising from the distal leaf axils of fertile shoots; peduncle and stipe purple, spathe tending to green or purple. Sumatera, Java, Sarawak? **5. Pothos junghuhnii**
- 9a. Spadix ovoid 10
- 9b. Spadix cylindrical 11
- 10a. Blade very narrowly lanceolate, c. 5 mm wide; spadix c. 3 mm diam. New Guinea **3. Pothos gracillimus**

- 10b. Blade more or less elliptic, c. 1–3 cm wide; spadix c. 7 mm diam. Maluku, New Guinea, Solomons 8. *Pothos zippelii*
- 11a. Spadix stipitate (very rarely sessile); inflorescences arising in the axils mostly of distal leaves of a flowering branch, only rarely terminal on leafy branchlets; petiole usually longer than the blade. Warm temperate to tropical eastern Australia.... 10. *Pothos longipes*
- 11b. Spadix sessile; inflorescence terminal or lateral; petiole longer to shorter than the blade. Not in Australia 12
- 12a. Inflorescence always terminal on a leafy shoot; spathe lanceolate; petiole usually longer than the blade. Sabah, Sulawesi and the Philippines 11. *Pothos cylindricus*
- 12b. Inflorescence usually lateral on a (sometimes sympodially branched) short shoot in distal leaf axils; spathe oblong-ovate to oblong-lanceolate; petiole usually shorter than to equalling the blade. Papuaasia..... 9. *Pothos papuanus*
- 13a. Spadix with scattered flowers arranged in a loose spiral 14
- 13b. Spadix with congested flowers arranged in a dense spiral 19
- 14a. Flowers stipitate, each with a prominent receptacle; tepals fused, forming a cup. Borneo 42. *Pedicellarum paiei*
- 14b. Flowers sessile, lacking a receptacle; tepals free 15
- 15a. Spadix 0.4–1.2 cm long; flowers usually 3, seldom more than 5, per inflorescence. Sarawak 41. *Pothos oliganthus*
- 15b. Spadix 3.5–19.8 cm long; flowers many per inflorescence 16
- 16a. Spadix smooth, glabrous. Philippines (Luzon, Samar) 39. *Pothos luzonensis*
- 16b. Spadix roughened or pubescent 17
- 17a. Petioles up to 10.5 cm long with a conspicuous sheath; leaf blades stiffly chartaceous spadix roughened. Sumatera (Sumatera Utara & Jambi), Thailand (Narathiwat), Peninsular Malaysia, Singapore 38. *Pothos curtisii*
- 17b. Petiole up to 5 cm long, sheath not conspicuous; leaf blades thinly or stiffly coriaceous, spadix pubescent. 18
- 18a. Leaf blade stiffly coriaceous, very short ginger-tomentose abaxially, base obtuse to slightly cordate; primary lateral veins arising at 70–85°, 2 intramarginal veins per side, 2–20 mm from blade margin, arising from just above base of the midrib, remaining ± parallel to margin, terminating at the tip of the blade. Borneo 40. *Pothos motleyanus*
- 18b. Leaf blade coriaceous, glabrous and pale green abaxially, base acute to obtuse. NW Borneo 37. *Pothos beccarianus*
- 19a. Peduncle ascending 20
- 19b. Peduncle spreading to pendent 32
- 20a. Inflorescences almost always at the tips of leafy shoots 21
- 20b. Inflorescences carried on a climbing, plagiotropic or pendent, sympodial, simple or much branched cataphylliferous branches 25
- 21a. Inflorescence small; spathe c. 2 cm long; spadix, c. 2 cm long. Australia (NE Queensland) 32. *Pothos brassii*
- 21b. Inflorescence medium to large; spathe exceeding 2.5 cm and mostly exceeding 10 cm; spadix exceeding 2.5 cm and mostly exceeding 5 cm. Not in Australia 22
- 22a. Spadix sessile. Philippines 13. *Pothos dolichophyllus*
- 22b. Spadix stipitate 23
- 23a. Leaf blade stiffly chartaceous to coriaceous, (3–)8.5–27 × (2.5–)7–27 cm, spreading, oblong ovate to very broadly ovate, oblique, sometimes profoundly so, base broadly rounded to narrowly cordate. Sumatera (P. Simeulue), W Malaysia (P. Tioman), Sarawak, Sabah, Philippines 14. *Pothos ovatifolius*

- 23b. Leaf blade chartaceous, oblong-elliptic to ovate-oblong or elliptic, base acute to rounded 24
- 24a. Peduncle 2.7–5 cm; spathe 2.5–10; stipe 0.8–1.5, fertile portion of spadix 5–6.5 cm. Thailand (Yala), Sumatera (Aceh), Peninsular Malaysia (Pahang), Borneo 15. *Pothos leptostachyus*
- 24b. Peduncle 10–20 cm; spathe 11–27; stipe 2–4, fertile portion of spadix 10–22 cm. Sulawesi, Maluku, New Guinea, Solomon Islands and Vanuatu 12. *Pothos tener*
- 25a. Inflorescences carried on simple greatly elongated orthotropic to diageotropic clinging shoots clothed with large inflated cataphylls and arising from lower, often leafless, parts of sterile mature stems. Borneo, Philippines (Palawan) 33. *Pothos insignis*
- 25b. Inflorescences carried on much-branched, moderately elongated, free shoots clothed with leaves or with small, not or barely inflated cataphylls. Sumatera, Peninsular Malaysia, Java, Borneo, Philippines (excluding Palawan), Maluku, New Guinea 26
- 26a. Leaves glaucous abaxially; spathe fleshy, deep purple, glossy. Brunei Darussalam 31. *Pothos laurifolius*
- 26b. Leaves not glaucous abaxially; spathe not fleshy. Borneo, Maluku, New Guinea, Philippines 27
- 27a. Inflorescences carried on moderately elongated, free shoots clothed with leaves; stigma with a long slender persistent style. Borneo 30. *Pothos brevistylus*
- 27b. Inflorescences carried on much-branched, moderately elongated, free shoots clothed with small, not or barely inflated cataphylls; stigma flat. Sumatera, Peninsular Malaysia, Java, Philippines (excluding Palawan), Maluku, New Guinea 28
- 28a. Spadix markedly tapering. Maluku, western New Guinea 36. *Pothos calcifolius*
- 28b. Spadix cylindrical. New Guinea, Philippines 29
- 29a. Spadix sessile. Papua Barat (Jayapura), NE Papua New Guinea (W Sepik) 30
- 29b. Spadix sessile or briefly stipitate. Sumatera, Peninsular Malaysia, Java, Philippines 31
- 30a. Inflorescences multiple, borne on lax (foliage-)leafless sympodial branch systems. NE Papua New Guinea (W Sepik) 35. *Pothos polystachyus*
- 30b. Inflorescences solitary or paired, rarely few together. Papua Barat (Jayapura) 34. *Pothos cuspidatus*
- 31a. Spadix fertile portion 2.5–4 × 0.2–0.4 cm. Sumatera, Peninsular Malaysia, Java 28. *Pothos oxyphyllus*
- 31b. Spadix fertile portion 1–2 × 0.2–0.4 cm, Philippines 29. *Pothos inaequilaterus*
- 32a. Peduncle stout, twisted basally to carry inflorescence beneath the shoot 33
- 32b. Peduncle slender, arching 39
- 33a. Spathe inflated, cucullate 34
- 33b. Spathe not inflated and cucullate 36
- 34a. Inflorescence on a foliage-leafless shoot arising below a foliage leaf; spathe 3–4 cm long. Sumatera 20. *Pothos englerianus*
- 34b. Inflorescence on a foliage-leafless in the axils of distal leaves, occasionally from such shoots arising (persisting?) on leafless older stems or terminal on leafy shoots; spathe 4–11 cm long. Not Sumatera 35
- 35a. Leaf tip abruptly cuspidate; spathe thin-textured, white, purple-flushed. Borneo 21. *Pothos atropurpurascens*
- 35b. Leaf tip attenuate-mucronate, acute or attenuate; spathe softly-leathery, deep purple inside and out. Thailand (south peninsular), Peninsular Malaysia 22. *Pothos kingii*

- 36a. Peduncle 2–4 cm long; spathe lorate, strongly reflexed, appressed to peduncle. Sumatera, Peninsular Malaysia and Borneo 16. *Pothos barberianus*
- 36b. Peduncle 8–45 cm long; spathe lorate to triangular, reflexed, spreading or erect 37
- 37a. Peduncle 8–12 cm long; spadix decurrent on peduncle; spathe erect over spadix. Philippines 19. *Pothos philippinensis*
- 37b. Peduncle 12–45 cm long; spadix sessile or briefly stipitate, not decurrent; spathe reflexed to erect 38
- 38a. Spathe lorate, strongly reflexed, appressed to peduncle; spadix sessile. Borneo 17. *Pothos longivaginatus*
- 38b. Spathe triangular-lanceolate, spreading; spadix briefly stipitate. Sumatera 24. *Pothos brevivaginatus*
- 39a. Leaf blade very narrow elongate lanceolate-elliptic, stiffly coriaceous. Peninsular Malaysia 23. *Pothos salicifolius*
- 39b. Leaf blade not as above 40
- 40a. Spathe 19–37 cm long, enormously elongate-lanceolate, drooping and twisting into two or more graceful elongate spirals, base long-decurrent for up to 5 cm on peduncle. Borneo 27. *Pothos mirabilis*
- 40b. Spathe not as above 41
- 41a. Spathe lorate, spreading to weakly reflexing; spadix stipitate (5.2–)6–7.7 cm long. Peninsular Malaysia, Java, Borneo 25. *Pothos wallichii*
- 41b. Spathe ovate-triangular to lanceolate; spadix sessile 2–5 cm long 42
- 42a. Peduncle 6–7 cm long, very slender; spathe 4–5 × 0.9–1.5 cm, broadly ovate-triangular-lanceolate, thinly papery; spadix 2–3 cm long. Sarawak and Brunei Darussalam 26. *Pothos volans*
- 42b. Peduncle 1.5–5 cm, stout; spathe 2.5–10 lanceolate, slightly softly-leathery; spadix 1.5–5 cm long. Peninsular Malaysia 18. *Pothos lancifolius*

Subgenus *Pothos*

Pothos subgen. *Eupothos* Schott, Aroideae 1 (1853) 21. — *Pothos* sect. *Eupothos* Engl. in A. & C. DC., Monogr. Phan. 2 (1879) 78. — [*Pothos* series *Scandentes* Engl., Pflanzenr. 21(IV.23B) (1905) 22, nom. superfl. pro ser. typ.]. — Type: *Pothos scandens* L.

Pothos series *Papuanii* Engl., Pflanzenr. 21(IV.23B) (1905) 22. — Type: *Pothos papuanus* [Becc. ex] Engl. (lecto selected here). Lectotypifications of these series are based on the typifications implicit in the names Engler used.

Pothos series *Loureiriani* Engl. Pflanzenr. 21(IV.23B) (1905) 22. — Type: *Pothos loureirii* Hook. & Arn. (lecto selected here).

Pothos series *Longipedes* Engl., Pflanzenr. 21(IV.23B) (1905) 22. — Type: *Pothos longipedes* Schott (lecto selected here).

1. *Pothos scandens* L.

Pothos scandens L., Sp. Pl. (1753) 698 & Sp. Pl. edn 2 (1763) 1373–1374, 1675; Schott in Schott & Endl., Melet. Bot. (1832) 21; Endl., Gen. Pl. 3 (1837) 239; Kunth, Enum. Pl. 3 (1841) 65–66; Miq., Flora Ned. Indië 3 (1856) 178; Schott, Aroideae 1 (1856–7) 22, t.33 & Gen. Aroid. (1858) t.95 & Prodr. Syst. Aroid. (1860) 563; Engl. in A. & C. DC, Monogr. Phan. 2 (1879) 84; Hook.f., Fl. Brit. Ind. 6 (1893) 551–552; Engl. in Engl., Pflanzenr. 21 (IV.23B) (1905) 26–27; Ridl., Mat. Fl. Malay Penins. 3 (1907) 48; Koorders, Exkursfl.

Java, 1 (1911) 251; Ridl, Fl. Malay Penins. 5 (1925) 127–128; Henderson, Malayan Wild Flowers, Monocots (1954) 238–239 not as to Fig.143A; Boyce, Blumea 45 (2000) 180–186, figs 9a, 9b. — Type: *Herb. Hermann* 4: 39, No. 329 (lecto BM; selected by Suresh et. al. (1983)).

Pothos hernaphroditus (Blanco) Merr., Sp. Blancoanae (1918) 90; Backer & Bakh.f., Fl. Java, 3 (1968) 104. — *Batis hernaphrodita* Blanco, Fl. Filip. ed.1 (1837) 791. — Type: Philippines, Luzon, Laguna Prov., Mt Maquiling, Nov 1912, *Merrill, Sp. Blanco. No. 57* (K, neo, designated by Boyce (2000: 184)).

[*Pothos longifolius* C. Presl, Epimel. Bot. (1849) 242; Schott, Aroideae (1856–1857) 22, t.34 & Prodr. Syst. Aroid. (1860) 563–564; Engl. in A. & C. DC, Monogr. Phan. 2 (1879) 82–83 & in Engl., Pflanzenr. 21 (IV.23B) (1905) 25, nom. illeg., non *Pothos longifolius* Hoffmans., Verz. Pfl. 102: Nachtr. 3 (1826) 53 (Mexico) nec *Pothos longifolius* Link & Otto ex Steud., Nom. ed. 2 (1841) 391 (Venezuela). — Type: Philippines, Luzon, Tayabas, *Cunning* 682 (PRG, holo; iso BM, E, G, K, P)].

Pothos angustifolius C. Presl, Epimel. Bot. (1849) 243; Schott, Aroideae (1856–1857) 21, t. 31 & Prodr. Syst. Aroid. (1860) 559; Engl. in A. & C. DC, Monogr. Phan. 2 (1879) 81–82 & in Engl., Pflanzenr. 21 (IV.23B) (1905) 23–24. — Type: Myanmar, between Moulmine & Martaban, *Helper sub Herb. East India Co. no. 5944* (holotype not found; iso C, K, L, P).

[*Pothos microphyllus* C. Presl, Epimel. Bot. (1849) 243 ; Schott, Prodr. Syst. Aroid. (1860) 559–560; Engl. in A. & C. DC, Monogr. Phan. 2 (1879) 94, nom. illeg., non *Pothos microphyllus* Hook., Curt. Bot. Mag., (1829) t.2953 (Brazil). — Type: Myanmar, between Moulmine & Martaban, *Helper sub Herb. East India Co. no. 5942* (PRG, holo; iso K, P)].

Pothos leptospadix de Vriese in Miq., Pl. Jungh. 1 (1851) 105; Schott, Prodr. Syst. Aroid. (1860) 568. — Type: Indonesia, Sumatera, Angkola, near Tobing, *Junghuhn s.n.* (L, holo).

Pothos scandens L. var. *zeylanicus* de Vriese, Pl. Jungh. 1 (1851) 103. — Type: Sri Lanka, *Splitgerber* 27 (L, holo).

Pothos scandens L. var. *sumatranus* de Vriese, Pl. Jungh. 1 (1851) 103. — Type: Indonesia, Sumatera, *Junghuhn s.n.* (L, holo).

Pothos roxburghii de Vriese in Miq., Pl. Jungh. (1851) 103; Miq., Flora Ned. Indië 3 (1856) 178–179; Schott, Aroideae (1856) 22 & Prodr. Syst. Aroid. (1860) 565; Engl. in A. & C. DC, Monogr. Phan. 2 (1879) 81 & in Engl., Pflanzenr. 21 (IV.23B) (1905) 24–25; Backer & Bakh.f., Fl. Java, 3 (1968) 104. [— *Pothos longipedunculatus* Engl. in Engl., Pflanzenr. 21 (IV.23B) (1905) 27, nom. superfl. pro *P. roxburghii* — see Notes]. — Type: Bangladesh, Sylhet, *Wallich 4435D* (L, lecto; selected here).

Pothos chapelieri Schott, Aroideae (1857–1857) 22, t.35 & Prodr. Syst. Aroid. (1860) 564; Engl. in A. & C. DC, Monogr. Phan. 2 (1879) 80 & in Engl., Pflanzenr. 21 (IV.23B) (1905) 24. — Type: Madagascar, *Chapelier s.n.* (B†?).

Pothos exiguiflorus Schott, Aroideae (1856–1857) 21, t.41 & Prodr. Syst. Aroid. (1860) 561–562. — Type: India, Maharashtra, Concan, 1850, *Stocks s.n.* (K, holo; iso C).

Pothos cognatus Schott, Aroideae (1856–1857) 22, t.42 & Prodr. Syst. Aroid. (1860) 562. — *Pothos scandens* L. var. *cognatus* (Schott) Engl. in A. & C. DC., Monogr. Phan. 2 (1879) 84; Engl. in Engl., Pflanzenr. 21 (IV.23B) (1905) 26–27. — Type: India, Meghalaya, Khasia Hills, *Hooker & Thomson s.n.* (K, holo).

Pothos zollingerianus Schott, Oesterr. Bot. Wochenbl. 5 (1855) 19; Miq., Flora Ned. Indië 3 (1856) 178. — *Pothos zollingeri* ('*zollingerii*') Schott, Aroideae (1856–1857) 21, t.32 & Prodr. Syst. Aroid. (1860) 559–560; Engl. in A. & C. DC, Monogr. Phan. 2 (1879) 85–86, orth. var. — *Pothos scandens* L. var. *zollingerianus* (Schott) Engl. in Engl, Pflanzenr. 21

(IV. 23B) (1905) 26. — Type: Indonesia, Java, near Bandung, G. Ardjuno, 19 Sep 1844, Zollinger 2275 (L, holotype; iso BM, P).

Pothos horsfieldii Miq., Fl. Ned. Indië 3 (1856) 178; Schott, Prodr. Syst. Aroid. (1860) 560–561. — *Pothos angustifolius* Reinw. ex Miq., Bot. Zeit. 14 (1856) 561, nom. illeg., non *Pothos angustifolius* C. Presl, Epimel. Bot. 243 (1849) (Myanmar). — Type: Indonesia, Java, Surokerto, 1802–1818, *Horsfield s.n.* (K, holotype; iso A, BM).

Pothos decipiens Schott, Bonplandia 7 (1859) 165 & Prodr. Syst. Aroid. (1860) 562–563. — Type: India, W Bengal, probably near Calcutta, *Voigt s.n.* (C, holotype).

Pothos fallax Schott, Prodr. Syst. Aroid. (1860) 559–560. — Type: Indonesia, S Kalimantan, Banjarmasin ('Bangarmassing'), 1857–1858, *Motley 1194* (K, holotype).

Pothos scandens L. fm. *angustior* Engl. Bot. Tidsskr. 24 (1902) 272. — Type: Thailand, Klong Munse, 7 Feb 1900, *Schmidt 853* (C, lectotype, selected by Boyce (2000: 181)).

Pothos scandens L. var. *helferianus* Engl. in Engl., Pflanzenr. 21 (IV.23B) (1905) 26. — Type: Myanmar: Taninthari, Mergui, between Moulmine & Martaban, *Helper sub Herb. East India Co. no. 5942* (K, lectotype; isolectotype P, selected by Boyce (2000: 181)).

[*Pothos auriculatus* S.Y. Hu, nom. nud. in sched. GH, MO].

[*Pothos leschenaultii* Buchet, nom. nud. in sched. P].

[*Pothos nosibeensis* Buchet, nom. nud. in sched. L, P].

[*Pothos scandens* L. var. *falconeri* Buchet, nom. nud. in sched. P].

[*Pothos scandens* L. var. *godefroyi* Buchet, nom. nud. in sched. P].

[*Pothos scandens* L. var. *macrospadix* Buchet, nom. nud. in sched. P]

Slender to moderately robust, homeophyllous, root-climbing liane. *Shoot system* well-differentiated into adherent, non-flowering and free, often greatly elongated, lateral flowering branches; eocaul not observed; seedling with leaves congested, subshingling but not different in shape to those of adult shoots. *Leaves* bright to deep-green adaxially, paler abaxially, drying dull green to brownish; petiole 2–14 × 0.5–2 cm, lamina-like, obovate-oblong to linear-oblong, base decurrent, apex truncate, rounded or auriculate; blade 2–10 × 3–14 cm, ovate to elliptic or lanceolate, base rounded to acute, apex attenuate-mucronate; primary lateral veins arising at 20–45°, intramarginal veins 2 per side. *Inflorescence* solitary in the axils of middle and distal leaves, borne on condensed shoots bearing a minute prophyll and a few 3–10 mm long (sequentially longer) cataphylls; peduncle 3–15 × 0.5–2 mm, slender, erect to spreading, green to purple-tinged. *Spathes* 4–8 × 4–7 mm, ovate, concave, margins variously inrolled, base short or somewhat long-clawed, apex rounded to acute with a tiny rather stout mucro, greenish to maroon. *Spadix* stipitate; stipe 5–10 × c. 1 mm, erect, the distal part erect to bent through 270°, greenish to maroon; fertile portion 4–10 × 3.5–10 mm, globose or ovoid to subclavate, yellow-green to off-white. *Flowers* c. 1–2 mm diam.; tepals 6, free; stamens 6. *Infructescence* with 1–5 berries; fruit 10–17.5 × 10–14 mm, obclavate, mid-green ripening to deep scarlet; seeds c. 3–6 mm diam., ellipsoid to compressed-globose. — Figs. 1, 2.

Distribution — Widespread from Madagascar, through India and the Himalaya to SW China, south through Indochina. In *Malesia*: Peninsular Malaysia and Sumatera (in Sumatera only known from *P. Simeulue*), Borneo (Brunei and Sabah) and the Philippines.

Habitat — On trees and rocks in primary and secondary wet to dry lowland to hill evergreen tropical to subtropical forest, occasionally on sea cliffs, in hedges or scrub or



Fig. 1. *Potlios scandens*. a, fertile shoot; b, fertile shoot; c, whole leaf; d, detail of junction of lamina and petiole; e, venation detail; f, inflorescence; g, spadix detail; a, Helfer 5943; b–c, Collins 1730; f–e, Bogner 156. Scale bar: a = 20 mm; b = 100 mm; c = 40 mm; d = 10 mm; e = 10 mm; f = 5 mm; g = 1 mm.



Fig. 2. *Pothos scandens*. a, eocaul; b, juvenile shoot; c, juvenile shoot, later stage; d, mature sterile shoot: a-d, Bogner 407. Scale bar: a = 30 mm; b = 30 mm; c = 30 mm; d = 30 mm.

in coconut plantations, on a variety of substrates including clay, limestone and granite. Sea-level to 1000 m altitude.

Notes — *Pothos scandens* has a wide geographical range and a bewildering range of morphological variation that has resulted in the recognition of many segregate taxa. Although most of these segregate taxa fit into *P. scandens* without stretching its morphological boundaries too much, *P. angustifolius* C. Presl, a much branched low-growing plant with extremely slender leaves and minute inflorescences, is exceptional. To date plants matching the type of *P. angustifolius* have only been collected along the Myanmar (Tenasserim) Andaman Sea coast, although similar but less congested plants have been found in Thailand. Further collections of this plant are required. Ideally, plants should be brought into cultivation to determine if the habit is retained or whether it is a plastic response to the plants' presumably harsh environment.

Pothos scandens is unmistakable in its typical aspect, carrying rather small inflorescences on bent peduncles. However, as noted above, the species is highly variable. Some populations comprise high-climbing plants bearing tiny inflorescences. Other populations produce rather large inflorescences not exhibiting the bent peduncle until very late anthesis or during early infructescence development. Such large-inflorescenced plants have been frequently incorrectly identified as '*P. roxburghii*' (q.v.).

Pothos roxburghii de Vriese was based on a Wallich specimen and a Wight illustration, and also included a Junghuhn specimen from Sumatera. Schott excluded the latter and used it as the basis of his *P. vrieseanus* (= *P. junghuhuii* q.v.). Of the two remaining syntypes we have chosen the Wallich specimen over the illustration as lectotype of *P. roxburghii* as it is more useful for naming purposes.

The illegitimacy of *Pothos longipedunculatus* Engl. may be interpreted in two ways. First, Engler (1905) included *P. roxburghii* de Vriese in its synonymy, thus automatically making it a superfluous name for *P. roxburghii*. Second, however, it appears that he intended, in erecting *P. longipedunculatus*, to include only that part of *P. roxburghii* de Vriese represented by Junghuhn's specimen from Sumatera, since he had, three pages earlier, recognised *P. roxburghii* as an Indian species. By including the Junghuhn specimen as one of the two syntypes of *P. longipedunculatus*, he had included the type of *P. vrieseanus* Schott, thus rendering *P. longipedunculatus* a superfluous name for that species. Rather than fathoming Engler's intention (notwithstanding its being rather obvious), we have taken the first, more mechanical approach, and hence *P. longipedunculatus* goes into the synonymy of *P. scandens* rather than *P. junghuhuii*.

Other specimens examined: PENINSULAR MALAYSIA: Kedah, Ulu Muda, near Muda Daun valley, Bray FRI 11776 (A, K, KEP, SING); Pahang, 8 miles S of Kuala Lipis, Burkill & Haniff SFN 17194 (SING, UCL); Perak, Ipoh, 2 miles N of Gopeng, G. Pipit, Chiu 795 (SING, UPM); Johore, Sg. Kayu, Mawai to Jemaluang road, Corner SFN 32284 (SING); Terengganu, Kuala Brang, Corner SFN 33493, (BM, K, SING); Penang, Curtis 285 (SING); Selangor, Curtis 2394 (BM, SING); Penang, Haniff 2715 (SING); Perak, Kota Lawa, Kuala Kangsar, Haniff SAN 15560 (SING); Perak, Lubok Merbok to Kuala Kangsar, Haniff SFN 15994 (SING); Perak, Dinding to Telok Aman, Haniff SFN 14301 (SING, UCL); Selangor, Ulu Selangor, Sg. Buloh, Hardial & Sidek 384 (A, C, K, SING); Perak, Tambau, near Ipoh, on way to Tanjung Rambutan, Hay et al. 9030 (NSW, UPM); Perlis, Mata Ayer, near Kangar, Henderson SFN 23084 (SING); Perak, Gua Badak, Lenggong, Henderson SFN 23844 (BO, K, SING); Terengganu, Kuala Terengganu, Pulau? Duyong Besar, Huue 89 (UPM); Pahang, Taman Negara, Bk. Mat Daling, Kasuu 122 (UKMB); Kedah, Alor Setar, G. Keriang, Kiah SFN 35428 (K, SING); Pahang, Taman Negara, Kuala Sat, Latiff 104 (UKMB); Selangor, Highway from Kuala Lumpur to Fraser's Hill, Nicolson 1168 (US); Kedah, Langkawai, Bt. Sawak F.R., Nor FMS 31382 (KEP); Kedah, Kuala Kangsar, Ridley 2953 (BM, SING); Selangor, Bt. Gua, Ridley 8167 (BM, CAL, K, SING); Perak, Temengor, Ridley 14371 (BM, SING); Kedah, Alor Setar, Bk. Pinang, Ridley 14791 (BM, SING); Kedah, Alor Setar, Ridley s.n. (K); Selangor, Batu Caves, Ridley s.n. (BM, K); Selangor, Bt. Gua (Gowa), Ridley s.n. (SING); Perak, Scortechini 56 (K, SING); Perak, Scortechini 1137 (K); Perak,

Scortechini s.n. (K); Johore, 19 miles along Kota Tinggi - Jemaluang road, *Sinclair* SFN 40354 (SING), *Sinclair* SFN 40356 (BM, E, K, P, SING, US); Kelantan, Gua Musang, Ulu Kelantan, *UNESCO Limestone Exp.* 317 (SING); Perak, Kg Kota, *Wray* 3322 (SING), *Wray* 3332 (BM, CAL, E); Kelantan, Bt. Lintang, G. Ring, *Zainudin* 1882 (UKMB). SUMATERA: P. Simeulue, *Achmad* 375 (SING), *Achmad* 1816 (K, P, SING). JAVA: W Java, Depok, *Burck* s.n. (BO); C Java, Kemantan, Tegal, *Docters van Leenwen* s.n. (BO); C Java, Besuki Situ, Pancoer, *Koorders* 20433 (SING); E Java, Besuki (Besoeiki) -Siraé Bando, Pandjaeri Tjjeri, *Koorders* 20433B (BO, P); E Java, Preanger, Besuki Jember, *Koorders* 20434 (A, BO); C Java, Pekalongan, Subah (Saebul), *Koorders* 22539 (SING); Pasoeroean, Tanghii-Zuidergeb, *Koorders* 23671B (P), C Java, Semarang, Kedungjack (Kedaengdjak), *Koorders* 25016 (SING); C Java, Subah (Soibah), *Koorders* 26401B (BO, P); C Java, Preanger, G. Pangentjangan, *Koorders* 29883 (BO); Djapara, Tajoe Ngarengan, *Koorders* 35003B (P); *Lahaie* 2215 (P); No further information, *Lesclmault* s.n. (P); *Lörzing* 1041 (BO); E Java, Madiun (Madioen), *Wisse* s.n. (BO); W Java, near Bandung, *Zollinger* 854Z (P). NUSA TENGGARA: P. Lombok, *Elbert* 1816 (BO, K); Sumbawa, Bima, Tuntu (Tente?), *Elbert* 3549 (A, B); W Sumbawa, Mt Bt. Lanteh, NW slope, trail from Bt. Dulang to Pusu, *Kostermans* 18699 (BO, K, SING, US); P. Bali, N of Tabanan, Mt Bt. Karu, road from Wongaja to Pura Luhur, *Wirawan* 444 (A, BO, K). BORNEO: SARAWAK: 5th Div., Lawas, *Brooke* 10030 (BM); 5th Div., Lawas River, *Burbidge* s.n. (K); No further information, 'Native collector' BS 1680 (US); 1st Div., Matang F.R., 10 miles W of Kuching, *Nicolson* 1283 (US); 1st Div., Kuching, *Ridley* s.n. (SING); 2nd Div., Rumah Danau, Ulu Engkilili, *Yii* S 44544 (K, L, SAR, US). BRUNEI DARUSSALAM: Muara, Gadong, Rimba, *Wong* 1635 (BRUN, K). SABAH: Lahad Datu, Bk. Blachan at Lahad Datu - Sandakan road ferry, *Beaman* 10129 (K, UKMS, US); Lahad Datu, Silam mainline, *Chai* SAN 26034 (K, SAN); Dallas, Tinimpok (Tenempok?) ridge, *Clemens & Clemens* 26808 (A, BM, K, SING, UCL); Ranau, Singgaron Baru, Marali side, *Gambating* SAN 114312 (K, KEP, SAN); Lahad Datu, Madai F.R., *Sands* 6033 (SAN); Ranau, near Kg Pinawantai, *Shah & Aban* SAN 76765 (A, K, KEP, L, SAR, SING); Ranau, Kg Pinawantai, *Shah & Aban* SAN 78765 (KEP, SAN). KALIMANTAN: 'Kapaeas', *Teysmann* 8100 (BO). PHILIPPINES: Luzon, Manila, *Barthe* s.n. (P); Luzon, Manila, *Callery* s.n. (P); Leyte, Maimit, *Celis* PNH 170403 (PNH); Mindoro, Mt Yagaw, S slope, *Conklin* PNH 18976 (A, PNH); Mindoro, N coast, Subaan River inland from San Teodoro, *Coode* 5378 (K, L, PNH); Mindanao, Davao, *Copeland* 959 (US); Mindoro, Mt Halcon, *Edaño* PNH 3382 (A, PNH); Luzon, Laguna, Los Banos, *Elmer* 9412 (E, K); Luzon, Laguna, Los Banos (Mt Maquiling), *Elmer* 18005 (A, C, BM, K, MO, P, US); Luzon, Zambales, Mt Pinatubo, *Fox* PNH 4722 (A, PNH); Luzon, Manila, *Gaudichand* s.n. (P); Luzon, Laguna, Mt Maquiling, *Gonzalez* 1667 (K); Luzon, Laguna, Mt Maquiling, Sitio Kalbano, above Forestry College, *Lagrimas* PNH 9715 (A); Luzon, Rizal, *Loher* 7044 (K); Luzon, Rizal, *Loher* 7045 (K); Luzon, Rizal, *Loher* BS 14778 (A); Luzon, Laguna, *Mabesa* BF 24911 (P); Luzon, Laguna, Mt Macquiling, *Merrill* Sp. Blanco. 57 (A, BM, K, MO, P, US); Luzon, Rizal, Bozobo, *Merrill* BA 2792 (BM, K, P, US); Luzon, Laguna, path along Molawin Creek between Colleges of Agriculture and Forestry, *Nicolson* 748 (US); Luzon, Laguna, Mt Maquiling, path near Mud Springs, *Nicolson* 840 (US); Luzon, Rizal, *Ramos* BS 4 (US); Luzon, Rizal, *Ramos* BS 13622 (BM, MO, US); Samar, Catubig River, *Ramos* BS 24475 (BM, K, P, US); Luzon, Rizal, *Reillo* BS 19211 (BM, K, P, US); Luzon, Laguna, Mt Maquiling, *Sulit* PNH 7071 (A, PNH); Luzon, Albay, Saraga, *Vidal* 1950 (K); Luzon, Batangas, NE Maquiling, *Vidal* 1989 (A, K); Luzon, Bataan, Morow, *Vidal* 1990 (A, K); Luzon, Camarines Sur, NE Isarog, *Vidal* 3966 (A, K); Leyte, *Wenzel* 265 (MO); Luzon, near Banos Luconia, *Wilkes* s.n. (A). SULAWESI: Sulawesi Utara, 250 km W of Gorontalo, 75 km inland from Papayuto, tributary of Sg. Papayuto, *Burley et al.* 4159 (BO, K). MALUKU: Sula Mangoli, N of Kg Mangoli, *Bloembergen* 4570 (A, SING), P. Ceram, Manusela N.P., Wae Mual, *Edwards* 228 (E); P. Mangole, G. Papao, *Hulstyn* 23 (BO); W Ceram, Kairatu, Gemba, *Kuswata & Soepadmo* 28 (A, BO, K, SING); Ambon, *Lahaie* 1061 (P); P. Ambon, *Robinson* Pl. Rumph. Amboin. 118 (A, BM, K, MO, P, SING, US); P. Ceram, *Suharno* 229 (BO); Ambon, Hila, *Treub* s.n. (BO).

2. *Pothos clavatus* Engl.

Pothos clavatus Engl. Bull. Soc. Tosc.ortic. 4 (1879) 266 & in Becc., Malesia 1 (1883) 261, t.16, figs 1-4 & in Engl., Pflanzenr. 21 (IV.23B) (1905) 31-32; Hay, Blumea 40 (1995) 413. — Type: Papua Barat, Kepala Burung Prov., Sorong, 1872, *Beccari* p.p. 487 (B, lecto; isolecto FI, selected by Hay (1995: 413)).

Slender root-climbing liane or hemi-epiphyte. Shoot system well differentiated into adherent, non-flowering and free, lateral flowering branches; ecocaul and seedling not observed. Leaf dark green, rather fleshy; petiole 3-5 cm × 1.1-1.5 cm, lamina-like,



Fig. 3. *Pothos clavatus*. a, fertile shoot; b, fertile shoot; c, spadix; d, fertile shoot: a, *Pleyte* 723; b & c, *Streimann* NGF 28802; d, *Carr* 12116. Scale bar: a, c = 2 cm; b = 8 mm; d = 7 mm.

shorter than the blade, distally emarginate to auriculate; blade c. 6.5–10 cm × 2–4.5 cm, narrowly ovate to ovate to oblong-obovate, apex acute to somewhat acuminate, base rounded; primary lateral nerves diverging at 40–60°, intramarginal veins 2 or 3 on each side of the midrib. *Inflorescence* solitary, in the axils of distal leaves, borne on condensed short shoots and subtended by cataphylls, the last and largest oblong, c. 2 cm × 1 cm; peduncle 1–4.5 cm long, very abruptly expanded at junction with spadix and there c. 1 cm diam., blackish purple. *Spathe* c. 1.2 × 1 cm, broadly ovate, reflexed, greenish to purple-tinged. *Spadix* sessile; fertile portion c. 1.4 cm diam., ± spherical, yellow. *Flowers* c. 1.2 mm diam., with 6 free tepals and 6 stamens. *Infructescence* with rather few berries; fruit c. 1.1 cm long, ovoid, ripening red; seeds not observed. — Fig. 3.

Distribution — *Malesia*: endemic to New Guinea (confined to western Papua Barat).

Habitat — Lowland primary and secondary rainforest and fresh-water swampforest, 70–400 m altitude.

Note — Distinguished by the tip of the stipe abruptly expanded at the insertion of the fertile portion of the spadix, giving the latter the appearance of being borne in a cupule.

This species and *P. hellwigii* are evidently very closely related. The great majority of collections can be ascribed to one or other of these with confidence. However, there are occasional collections [of which *Nicolson 1415*, Papua New Guinea, Central Prov., Brown River F.R. (K, US) is typical] which appear to fall somewhere between *P. clavatus* and *P. hellwigii*. Interestingly, the Nicolson collection comprises a sheet with young inflorescences (K) that matches *P. clavatus* very well by the peduncle shape, and a fruiting specimen (US) which much more closely approaches *P. hellwigii*. Whether these intermediate specimens indicate incomplete separation of these species is not yet clear.

Pothos clavatus is confined to western New Guinea, while *P. hellwigii* is wide-ranging in New Guinea and Solomon Islands.

Other specimens examined: NEW GUINEA: PAPUA BARAT: Kepala Burung Prov., Ramoi, *Beccari p.p. 329* (FI); Kepala Burung Prov., Sorong, near Remu, *Pleyte 723* (L, SING); Kepala Burung Prov., Rufei River, N of Sorong, *van Royen 3153* (L); Waigei Is., Radjah Ampat, *van Royen 5252* (L). PAPUA NEW GUINEA: Central Prov., Port Moresby, Koitaki (c. 30 km WNW of Port Moresby), *Carr 12116* (BM, K, L, SING); Milne Bay Prov., Raba Raba, Biniguni to Maneau track, *Streimann NGF 28802* (A, BRI, K, L, LAE, SING, US).

3. *Pothos gracillimus* Engl. & K. Krause

Pothos gracillimus Engl. & K. Krause, Bot. Jahrb. Syst. 54 (1917) 74, fig.1; Hay, *Blumea* 40 (1995) 417. — Type: Papua New Guinea, ('Kaiser Wilhelms Land'), Telefomin Prov., Mai (Yuwa) River, Pflingstberg, 25 May 1912, *Ledermann 7411* (B, holo; iso E, K, SING).

Very slender, diminutive root-climbing liane or hemi-epiphyte. *Shoot system* very weakly differentiated into non-flowering and flowering branches; eocaul and seedling not observed. *Leaf* pale green, sub-chartaceous; petiole c. 1.5–3 cm × 3–4 mm, lamina-like, c. ¼–½ the length of the blade, distally rounded to somewhat auriculate; blade c. 5–9 cm × c. 3–7 mm, very narrowly lanceolate, apex attenuate, base rounded; primary lateral veins diverging at c. 20°, intramarginal veins 1 or 2 on each side of the midrib. *Inflorescence* solitary on condensed short shoots in the axils of distal leaves, subtended by cataphylls, the last and longest very narrowly lanceolate, c. 1–1.5 cm long; peduncle to c. 3.5 cm long, very slender. *Spathe* 6–8 × 4–5 mm, ovate-lanceolate, green. *Spadix* sessile, c. 3–7 × 3–4 mm, subspherical to ovoid-cylindric, green. *Flowers* c. 1.2 mm diam., with 6 free tepals and 6 stamens. *Infructescence* with 1–few berries; fruit ovoid to elliptic-obovoid, c. 1 cm long, cherry red when ripe; seeds not observed.

— Fig. 4.



Fig. 4. *Pothos gracillimus*. a, fertile shoot in flower; b, fertile shoot in fruit; c, spadix detail: a-c, Ledermann 7411. Scale bar: a, b = 2 cm; c = 2 mm.

Distribution — *Malesia*: endemic to New Guinea; known from only two very widely separated sites.

Habitat — Lowland to hill forest, up to 400 m altitude.

Note — This species is closely related to *P. zippelii*, differing principally in its very diminutive and slender stature. The very scattered distribution may indicate that this is a rare and/or very easily overlooked plant. Alternatively, the distribution may simply suggest that this is a sporadically arising depauperate form of *P. zippelii*; however, there are as yet no linking intermediates.

Other specimen examined: NEW GUINEA: PAPUA NEW GUINEA: Gulf Prov., Vailala River, Wade s.n. (K).

4. *Pothos hellwigii* Engl.

Pothos hellwigii Engl. Bot. Jahrb. Syst. 25 (1898) 2; K. Schum. & Lauterb., Fl. Schutzgeb. Südsee (1901) 210; Engl. in Engl., Pflanzenr. 21 (IV.23B) (1905) 31, fig.13; Rech., Denkschr. Wien Akad. Wiss. (1913) 509; Peekel ex Henty, Fl. Bismarck Archipelago (1984) 66, fig.109; Hay, Blumea 40 (1995) 411–412. — Type: Papua New Guinea, Morobe Prov., Finschhafen, Butaueng, 20 Mar 1889, *Hellwig* 468 (B, lecto, selected by Hay (1995: 411)).

Pothos hellwigii Engl. var. *latifolius* Lauterb., Bot. Jahrb. Syst. 45 (1911) 358. — Type: Papua New Guinea, New Ireland, Nebumai, *Peekel* 239 (holo B†). No extant material of this collection is known to exist. Furthermore, no other collections of *P. hellwigii* from New Ireland have been traced and thus neotypification is not undertaken here.

[*Pothos clavatus* auct. non Engl. apud Ridl., Trans. Linn. Soc. Lond. 9 (1916) 240].

Slender to moderately robust, often very vigorous root-climbing liane or hemiepiphyte. Shoot system well-differentiated into pendulous, free, lateral flowering branches and adherent shoots; eocaul not observed; seedling with congested leaves closely resembling adult leaves but smaller, becoming progressively larger as shoots elongate. Leaf dark green above, paler below; petiole 1–8 cm, weakly lamina-like, usually considerably shorter than the blade, $\frac{1}{7}$ to $\frac{2}{3}$ its length, the distal part somewhat to distinctly auriculate, sub-triangular (when short) to subparallel-sided (when longer); blade c. 8–12 × 2–4 cm, ovate-lanceolate to ovate (usually absent from early leaves of a sympodial module), apex not or somewhat acuminate, base mostly rounded; primary lateral veins diverging at 40–85°, intramarginal veins mostly 2 on each side of the midrib, one basal and running to the margin, one from about midway up the blade, running to the tip. Inflorescence solitary, rarely paired, borne on leafless condensed short shoots (these rarely with 1 or 2 reduced blade-bearing leaves) in the axils of usually only the most distal leaves, or less commonly terminal on the leafy shoot, or rarely on older leafless parts of the stem, the short shoots sometimes with scars of previous flowering, subtended by series of cataphylls, the longest and last to c. 3 cm long; peduncle to c. 7 cm long, gradually thickening upwards from the base more or less evenly throughout its length, slightly curved, deep purple-black. Spathes c. 1 × 2 cm, broadly ovate, emarginate-tipped, mucronulate, reflexed, dark green to dark purple. Spadix sessile, 0.6–1.3 (–1.8) cm diam., spherical, yellow. Flowers c. 1.1 mm diam. (dry), with 6 free tepals and 6 stamens. Infructescence with few to many berries; fruit to 2.5 cm long (fresh), ovoid, ripening deep red; seeds not observed. — Fig. 5.

Distribution — Solomon Islands (few records). In *Malesia*: widespread and common in New Guinea, with fewer records in the Bismarck Archipelago.

Habitat — Lowland rainforest, secondary regrowth and lower montane rainforest, sea level to 1000 m altitude.



Fig. 5. *Pothos hellwigii*. a, fertile shoot; b, inflorescence; c, infructescence; d, adult adherent shoot; e, juvenile adherent shoot: a-c, Johns 7657; d-e, Nicolson 1481. Scale bar: a = 3 cm; b = 4 mm; c-e = 2 cm.

Notes — Closely related to *P. clavatus*, but typically differing in the peduncle not abruptly swollen at the insertion of the spadix. However, intermediates between the two species do occur (see under *P. clavatus*).

Pothos hellwigii is also close to *P. zippelii*, although typically differs in the globose, not ellipsoid, fertile spadix. Here too, however, there are collections in which the fertile spadix is intermediate in shape between that of *P. hellwigii* and that of *P. zippelii* [notably *Nicolson 1576*: Papua Barat, Kepala Burung Prov., 2 km N of Manokwari (A, B, BM, BRI, K, L, LAE, P, SING, US) and *Brass 13876*: Papua Barat, Jayapura Prov., Taritatau ('Idenburgh') River, Bernhard Camp (A, BRI, L)].

Other specimens examined: NEW GUINEA: PAPUA BARAT: Mimika Prov., Puncak Jaya (Mt Carstensz), Camp VI a, *Boden Kloss s.n.* (BM, K); Kepala Burung Prov., Meremi, Manokwari, *BW 9806* (BRI, L, LAE); Kepala Burung, Manokwari, Kebar, Kebar valley, trail from Andjai to G. Neotti, near Base Camp N, *Davis 744* (BO, K, MAN); Jayapura Prov., Bonggo Range, nr Albatross Bivak, *Docters van Leeuwen 9129* (BO); Kepala Burung Prov., along side of road from Manokwari to G. Meja, *Johus 7657* (BO, K, MAN); Mimika Prov., Freeport Concession Area, Ecological Plot 5 near Kuala Kencana, *Johus 8764* (BO, K, MAN); Mimika Prov., Freeport Concession Area, surrounding Golf Course, *Johus 9855* (BO, K, MAN); Mimika Prov., Freeport Concession Area, Golf Club grounds, *Johus 10489* (BO, K, MAN); W end of Tafelberg F.P., 2 km N of Manokwari, *Nicolson 1579* (B, K, L, P, US); Mimika Prov., Freeport Concession Area, Rimba Irian Golf Course, outskirts of Kuala Kencana, *Puradyatmika 10441* (BO, K, MAN); Mimika Prov., Freeport Concession Area, in front of Golf Club towards access road, *Utheridge 309* (BO, K, MAN); Kepala Burung Prov., Tubub, N side of Lake Ajamaru, *Vink BW 15355* (A, K, L, LAE); Kepala Burung Prov., Segior, NW side of Lake Ajamaru, *Vink & Vink BW 15295* (K, L); Mimika Prov., Fakfak, *Widjaja 2511* (BO). PAPUA NEW GUINEA: Milne Bay Prov., Normanby Is., Vaikaiuna, *Brass 25609* (L); Morobe Prov., Oomsis Creek, *Brass 29186* (K, US); Western Prov., lower Fly River, E bank opposite Sturt Is., *Brass 8242* (BRI, L); Central Prov., Kanosia, *Carr 11565* (BM, K, L, SING); Central Prov., Kanosia, *Carr 11566* (BM, K, SING); Morobe Prov., Boana, *Clemens 41333* (US); Morobe Prov., Lae, Busu logging area, *Coode et al. NGF 32724* (A, BO, BRI, CANB, E, K, L, LAE, NSW, SING, US); Morobe Prov., Wau to Lae road, Purinin River, *Floyd NGF 6969* (K, LAE); Morobe Prov., Oomsis Creek, *Floyd NGF 7289* (K, LAE); Milne Bay Prov., Alotau, Magi Highway, 5 km from junction to Watubo, *Gideon LAE 77065* (L, LAE, US); Morobe Prov., near Butibum River, c. 6 miles N of Lae, *Hartley 11897* (BRI, CANB, K, L, LAE); Morobe Prov., c. 18 miles W of Lae, Oomsis Creek, *Hartley 10479* (BRI, CANB, K, L); Morobe Prov., Markham valley, Oomsis creek, near Lae, *Henty NGF 10663* (K, LAE); New Britain, Kandrian, Pulie River, W side, *Henty NGF 41828* (A, CANB, K, L, LAE, US); New Britain, Kandrian, Pulie River, W side, *Henty & Frodin NGF 27249* (A, BO, BRI, CANB, K, L, LAE); Morobe Prov., SE of Lae, on coast, opposite Lasanga Is., *Jacobs 9577* (L, US); Morobe Prov., Lae, Oomsis creek, *Johus NGF 47435* (BRI, CANB, K, L, LAE); Central Prov., Brown River F.R., Edevu logging area, 20-25 miles NW of Port Moresby, *Kairo NGF 30841* (A, BO, BRI, CANB, K, L, LAE, NSW, SING); Central Prov., Brown River F.R., 20-25 miles NW of Port Moresby, *Laravita & Vinas LAE 62235* (A, BRI, CANB, E, K, L, LAE, US); Bougainville, Pavairi, *Lavarack & Ridsdale NGF 31092* (A, BO, BRI, CANB, K, L, LAE, US); Eastern Prov., Fife Bay, *Lister Turner 22* (BM); Morobe Prov., Oomsis logging camp, near Lae, *Millar NGF 11798* (LAE, K, SING); Morobe Prov., Oomsis Creek, near Lae, *Millar NGF 9919* (LAE, K); Bougainville, Taki, Toiumompu plantation, *NGF 16403*, (BRI, L, LAE); Morobe Prov., Bumbu logging area, 7 miles N of Lae, *Nicolson 1387* (K, L, US); Morobe Prov., Bumbu logging area 7 miles N of Lae, *Nicolson 1388* (K, L, US); Morobe Prov., Bumbu logging area, 7 miles N of Lae, *Nicolson 1389* (K, L, US); Morobe Prov., Oomsis Creek, 20 miles from Lae on the Bulolo road, *Nicolson 1481* (B, K, L, P, US), *Nicolson 1482* (B, K, L, P, US); Bougainville, Arawa, McKillup's plantation 6 miles E of Kieta, *Nicolson 1519*, (B, K, US); New Britain, Kandrian, along road to airport, *Nicolson 1538* (B, K, L, LAE, P, US); Central Prov., Abau, Mori River, *Sayers NGF 19641* (A, BO, BRI, CANB, K, L, LAE, NSW, SING, US); Morobe Prov., Lae, Gabensis to Wagau track, 6 miles S of Gabensis, *Streimann & Fasavalu, NGF 47741* (A, BO, BRI, CANB, K, L, LAE, NSW, SING, US); Bougainville, Siwai, *Waterhouse 196-B* (K), *Waterhouse 196-B-B* (BRI, C, K, LAE, NSW); Morobe Prov., Busu River area, c. 10 miles N of Lae, *Webster & Hildreth 15087* (MO, UCL); Morobe Prov., Lae, Bupu River, 12 miles E of Lae, *Womersley NGF 43681* (A, BRI, CANB, K, L, LAE, US). SOLOMON ISLANDS: Choiseul, N Choiseul, along and W of Wasile River, *Gafni et al. BSIP 17385* (BSIP, K, L, LAE, SING).

5. *Pothos junghuhnii* de Vriese in Miq., Pl. Jungh. (1851) 104; Miq., Flora Ned. Indië 3 (1856) 179–180. — *P. junghuhuanus* Schott, Aroideae (1856–1857) 23, t.49 & Prodr. Syst. Aroid. (1860) 567, orth. var. — Type: Indonesia, Sumatera Utara, Tobing, *Junghuhu s.n.* (L, holotype).

Pothos scandens L. var. *javanicus* de Vriese, Pl. Jungh. 1 (1851) 103 ('*javanica*'), *syn. nov.* — Type: Indonesia, Java, 18 Aug 1842, Zollinger 422 (L, holotype; iso BM, K, P).

Pothos macrophyllus de Vriese in Miq., Pl. Jungh. 1 (1851) 104 ('*macrophylla*'); Schott, Aroideae (1856–1857) 23, t.38 & Prodr. Syst. Aroid. (1860) 566–567; Engl. in A. & C. DC, Monogr. Phan. 2 (1879) 82 & in Engl., Pflanzenr. 21 (IV.23B) (1905) 30–31, nom. illeg. non Sw. (1788), *syn. nov.* — Type: Indonesia, Sumatera Utara, *Junghuhu s.n.* (L, holotype).

Pothos vrieseanus Schott, Aroideae (1856) 22, t.36 & Prodr. Syst. Aroid. (1860) 565; Engl. in A. & C. DC., Monogr. Phan. 2 (1879) 80–81 & Engl. in Engl., Pflanzenr. 21 (IV.23B) (1905) 24, *syn. nov.* — Type: Indonesia, Sumatera, *Junghuhu s.n.* (L, holotype).

Slender to moderately robust, homeophyllous, root-climbing liane. *Shoot system* well-differentiated into adherent, non-flowering and free, lateral flowering branches; eocaul and seedling not observed. *Leaves* bright to mid-green adaxially, paler abaxially, drying dull green; petiole 3.5–8 × 0.5–2 cm, broadly winged, oblong to obovate-oblong, base decurrent to clawed, apex truncate, rounded or weakly auriculate; blade 3–13 × 1.5–6 cm, ovate to elliptic or oblong-lanceolate, base rounded to acute, apex attenuate-mucronate to acute or attenuate, briefly tubulate; primary lateral veins arising at 45–65°, intramarginal veins 2 per side of the midrib, these arising from the base and remaining rather close to midrib before diverging further along blade. *Inflorescence* solitary, arising from the distal leaf axils of fertile shoots, subtended by a minute prophyll and a few 0.5–3.5 cm, sequentially longer cataphylls; peduncle slender, 2.5–4(–5) cm × 1–1.2 mm, erect, dark purple. *Spathe* 6–15(–20) × 4–10(–15) mm, ovate, flat to convex, base cordate, clasping the peduncle, apex slightly raised, acute to subacute with a small mucro, dull green to purple. *Spadix* stipitate; stipe slender, (1–)2.5–3.5 × 1–1.5 mm, erect, straight, dark purple; fertile portion (3–) 6–14(–20) × (3–)3.5–6(–10) mm, globose to ovate-ellipsoid or ovoid-clavate, cream to yellow. *Flowers* 0.6–1.2 mm diam., with 6 free tepals and 6 stamens. *Inflorescence* with 1–8 berries; fruit c. 4–7 mm diam, ovoid or ellipsoid, ripening scarlet; seeds c. 3–6 mm diam., ellipsoid. — Fig. 6.

Distribution — *Malesia*: Sumatera, Java; one record from Sarawak but with no further information available.

Habitat — Primary to disturbed secondary forest, often on limestone, 5–600 m altitude.

Notes — *Pothos junghuhnii* displays a wide range of robustness, in particular in the size of the inflorescences which can vary greatly, even on different branches of the same individual. These variations have been the basis for the species regarded here as synonyms, with the smaller forms equating to *P. vrieseanus* and the larger forms to *P. macrophyllus*/*P. junghuhnii*. Generally, but not exclusively, Sumateran plants tend to be more robust with larger inflorescences.

In Sumatera confusion with *P. macrocephalus* is possible, although *P. junghuhnii* has the petiole not exceeding the blade and tends to be less floriferous. Fresh flowering material is separable on inflorescence colour — the peduncle and stipe purple and the spathe tending to green or purple in *P. junghuhnii* (peduncle orange-yellow, the stipe pale green and the spathe white in *P. macrocephalus*).

Other specimens examined: SUMATERA: W Sumatera, Kepulauan Mentawai, P. Sipora, *Batten Pool s.n.* (SING); Bengkulu, Kepahaing, *de Voigt 1303* (BO); Sumatera Barat, near K. Longsat, c. 20 km W from Sg. Dareh, *Hotta et al. 96* (BO, KYO, SING); Padang Si Dimpoean, Padang Lawas, Sopsopan



Fig. 6. *Pothos junghuhnii*. a, adherent sterile and free lateral fertile shoot; b, fertile shoot; c, whole leaf; d, venation detail; e, lamina tip; f, spadix; g, detail of single flower; h, infructescence: a, c-g, Bakhuizen van den Brink 4910; b, h, Hotta et al. 96. Scale bars: a = 3 cm; b, c = 2 cm; d = 5 mm; e = 1 mm; f = 3 mm; g = 1 mm; h = 1 cm.

on Aek Si Olip, *Rahmat Si Toroes* 5439 (A); E Coast, *Ridley s.n.* (BM); E Coast, Asahan, above Bandar Puluh, *Yates* 1333 (B, UCL), *Yates* 1764 (BO, UCL). JAVA: W Java, Bandjar, Bandar Dawa, *Backer s.n.* (BO); W Java, Bantam, between G. Kentjana and G. Kendang, *Backer* 1276 (BO, K); W Java, Bantam, Pandegelang, *Backer* 7457 (BO); W Java, Bantam, Pandegelang, *Backer* 7499 (BO); W Java, W Preanger, Badjong Lopang to Lengdong, *Backer* 17013 (BO); W Java, Klappa Nuygal(?), NE of Bogor, *Backer*, 23376 (BO); W Java, Laladan, Ciomas ('Tjiomas'), *Bakhuizen van den Brink* 4057 (BO); W Java, Jakarta, Cikandang ('Tjikandang'), G. Parang, *Bakhuizen van den Brink* 4910 (BO, K, P, SING); W Java, Preanger, Batang Gadung ('Gadoeng'), *Beunée* 534 (BO); W Java, Bantam, Preanger, Pungilis, between Bandjar and Kalipuchang ('Kaliputjang'), *Beunée* 722 (BO); W Java, Cibarus? ('Tjideroek'), *Boerlage s.n.* (BO, K); W Java, Bantam, Bantandjaja, Sindangwangi, c. 24 km S of Rangkasbetong, *Buwalda* 2907 (BO); W Java, Bogor, *Didrichsen s.n.* (C); no further information, *Forbes* 407 (BM); Yogyakarta, Kaliboto, *Hallier s.n.* (BO); C Java, Purwokerto, G. Binangun, *Joss* 101 (BO); W Java, Bogor, *Jungluhm s.n.* (BM); W Java, Bogor, *Kaap* 87 (BO); W Java, Bogor, *Kollmann s.n.* (BM); C Java, Nusa Kambangan, *Koorders* 22061 (BO); C Java, Nusa Kambangan, *Koorders* 22067 (BO); C Java, Nusa Kambangan, *Koorders* 24129 (BO, K); W Java, Jakarta, Depok, *Koorders* 31167 (BO); W Java, Jakarta, Depok, *Koorders* 44108 (BO); W Java, isthmus of Ujung Kulon, *Kostermans* 19339 (A, BO, C, K, L); W Java, Mt Hondje, *Kostermans* 19349 (A, BO, C, L, US); W Java, Situ Pandjalu, Tjiamis, Tasikmalaya ('Tasikmalaja'), *Kostermans et al.* 375 (BO, K); no further information, *Lobb s.n.* (K); no further information, *Nagle s.n.* (K, P); W Java, G. Moenara, Roempin Estate, NW of Bogor, *Suimoendt* 11 (BO); W Java, Jakarta, *van Harreveld* 684 (BO); W Java, Ciribon ('Cheribon'), Lingajati ('Linggadjati'), *van Steenis* 12509a (A, BO, K, SING); W Java, Priangan, Sangkiangtoro, G. Guntur ('Goentoer'), *van der Pijl* 100 (BO). BORNEO: SARAWAK: no further information, *Brooks s.n.* (BM).

6. *Pothos macrocephalus* Scort. ex Hook.f.

Pothos macrocephalus Scort. ex Hook.f., Fl. Brit. Ind. 6 (1893) 553; Engl. in Engl., Pflanzenr. 21 (IV.23B) (1905) 31; Ridl., Mat. Fl. Malay Penins. 3 (1907) 49 & Fl. Malay Penins. 5 (1925) 128, fig. 217; Henderson, Malayan Wild Flowers, Monocots (1954) 238–239, fig. 143B,C; Boyce, Blumea 45 (2000) 172–175, fig. 6a & b. — Type: Malaysia, Perak, Larut, *Scortechini* 116b (CAL, lecto; isolecto K, US; selected by Boyce (2000: 172)).

Large, robust, root-climbing liane to 15 m. *Shoot system* well differentiated into adherent climbing shoots and free lateral flowering branches; eocaul not observed; seedling with congested leaves similar to adult. *Leaves* bright to mid-green adaxially, paler abaxially, drying dull green to brownish; petiole 5–14 × 0.5–1.5 cm, broadly winged, oblong to obovate-oblong, base decurrent to clawed, apex truncate, rounded or auriculate; blade 3–18 × 1.5–20.5 cm, ovate to elliptic or lanceolate, apex attenuate-mucronate to acute or attenuate, minutely apiculate, base rounded to acute; primary lateral veins arising at c. 50°, intramarginal veins 2 to 4 veins per side of the midrib. *Inflorescence* solitary, in the axils of middle and distal leaves, sometimes arising on older (foliage) leafless parts, borne on condensed shoots and subtended by cataphylls, the last and longest cataphylls to 3.5 cm long; peduncle 4–10 × 0.15–0.2 cm, rather stout, erect, dull orange-yellow. *Spathes* 4–12 × 4–10 mm, ovate, flat to convex, base cordate, clasping the peduncle, apex slightly raised, acute to subacute with a stout mucro, white, somewhat waxy. *Spadix* stipitate; stipe 2.75–4 × 0.2–0.25 cm, erect, straight, pale green; fertile portion 12.5–15 × 10–12 mm, ovoid-clavate, mid-yellow. *Flowers* c. 1–2 mm diam.; with 6 free tepals and 6 stamens. *Infructescence* with 1–5 berries; fruit 10–17.5 × 10–14 mm, obclavate to ovoid or ellipsoid, epidermis of upper part roughened in submature fruits, more or less smooth when ripe, deep green ripening to scarlet; seeds c. 3–6 mm diam., ellipsoid to compressed-globose. — Figs. 7, 8.

Distribution — Thailand (Yala & Narathiwat). In *Malesia*: Peninsular Malaysia, Sumatera (Riau Province).

Habitat — Rain forest on granitic or limestone rock along streams in moist evergreen forest on moderate slopes, rarely in swamp forest, 50–1450 m altitude.

Note — The large yellow-and-white inflorescences are distinctive and combined with the long petiole and small blade make *P. macrocephalus* unmistakable. It is most similar

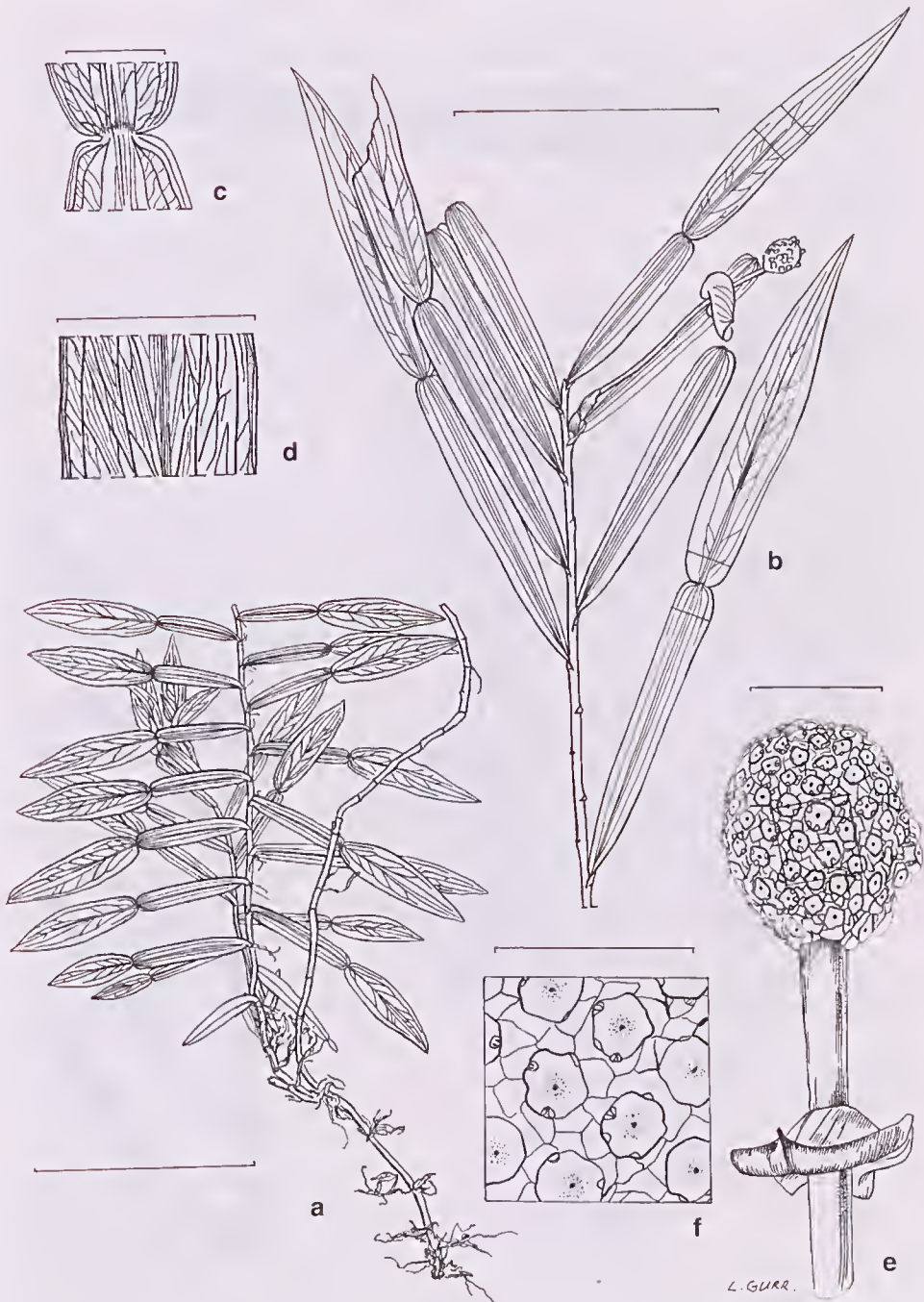


Fig. 7. *Pothos macrocephalus*. a, juvenile shoots; b, fertile shoot; c, detail of junction of lamina and petiole; d, venation detail; e, inflorescence; f, spadix detail: a-f, Boyce 1217. Scale bar: a = 10 cm; b = 6 cm; c = 5 mm; d = 1 cm; e = 1 cm; f = 4 mm.

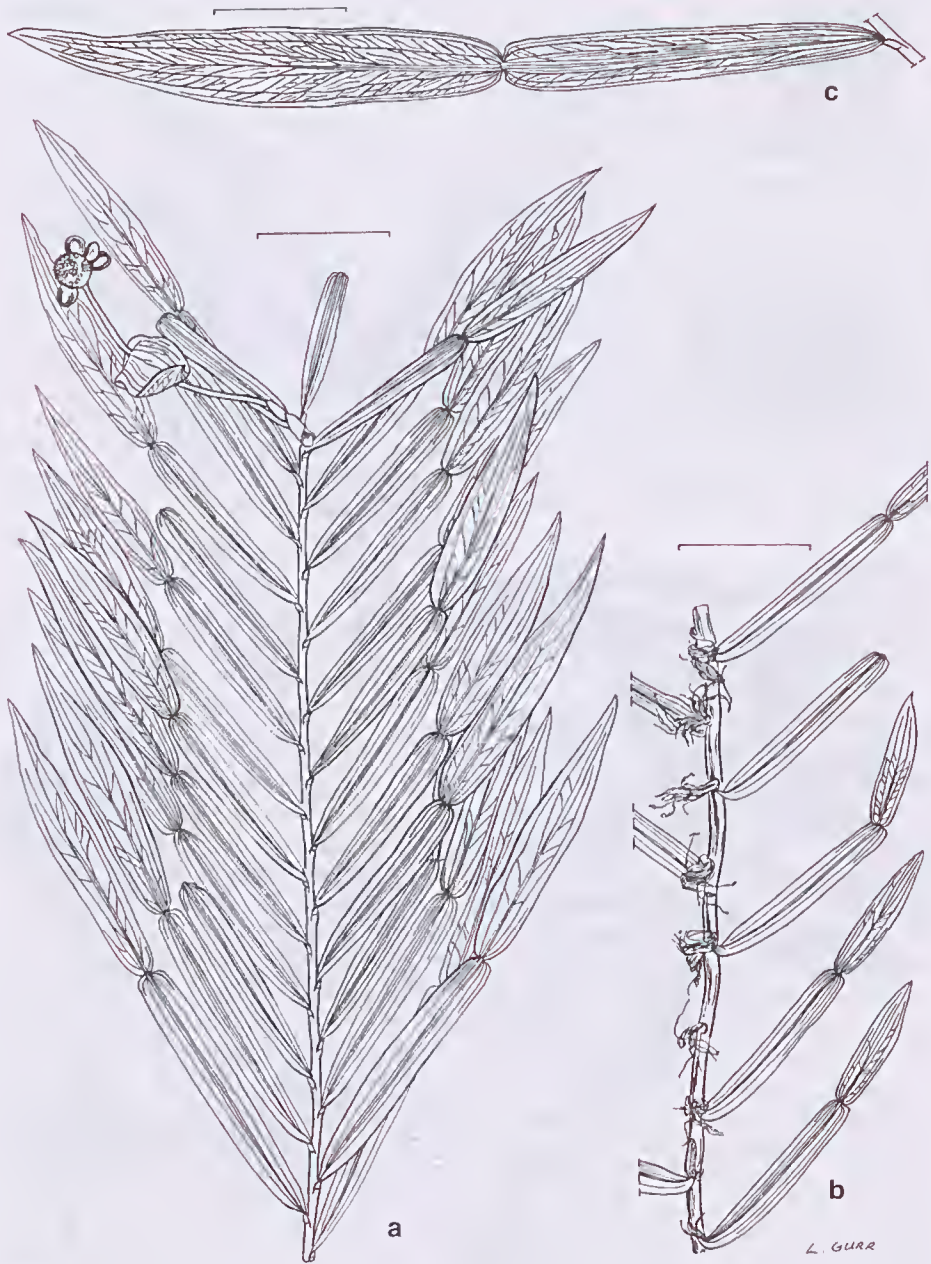


Fig. 8. *Pothos macrocephalus*. a, fertile shoot; b, sterile mature shoot; c, whole leaf: a-c, Boyce 1217. Scale bar: a = 4 cm; b = 8 cm; c = 3 cm.

in appearance to *P. junglulunii* although the shape of the mature leaves is quite different (compare Figs 6 & 6a with 5). In Sumatera confusion with *P. junglulunii* is possible, although *P. macrocephalus* has the petiole greatly exceeding the blade and tends to be far more floriferous with inflorescences arising at all but the basal-most leaf axils of the flowering branch. Fresh material is separable on inflorescence colour: *P. macrocephalus* has the peduncle orange-yellow, the stipe pale green and the spathe white, while the peduncle and stipe are purple and the spathe is green or purple in *P. junglulunii*. Sterile *P. macrocephalus* is confusable with *P. scandens* although in the latter the petiole is generally shorter than the blade and generally *P. macrocephalus* is a much more massive plant.

Other specimens examined: PENINSULAR MALAYSIA: Perak, Gua Puteri, *Ahmad & Sidek SA 638* (SING); Perak, Bk. Larut *Boyce 693* (K, KEP); Johore, Sg. Kayu, Mawai - Jemaluang Road, *Corner SING 29247* (BO, SING); Johore, Kulai, *Corner SING 30994* (SING); Johore, Mawai, *Corner s.n.* (K, SING); Terengganu, Kemaman, Ulu Kajang, *Corner s.n.* (SING); Perak, Natuloo, *Curtis 2895* (K, SING); Kedah, *Furlado SING 33050* (A, BO, K, SING); Kelantan, Gua Panjang at Gua Minik, *Henderson SING 19557* (SING); Perak, Gua Badak, Lenggong, *Henderson SING 23835* (K, SING); Johore, Sg. Kayu, *Keah SING 32104* (A, K, SING); Perlis, Bk. Kaki, *Kiah SING 35282* (A, BKF, BO, K, SING); Kelantan, Bt. Machang, Gua Musang, *Kiew & Anthonysamy 2858* (UPM); Perak, Goping, *Kunstler ('Dr King's collector') 492* (CAL, K); *4327* (BO, CAL, E, K), *6029* (BM, CAL, K, SING); Perak, Ipoh, G. Rapat, *Molesworth-Allen 4116* (SING); Pahang, Cameron Highlands, milestone between Tapah and Cameron Highlands, *Nicolson 1185* (US); Perak, Ipoh, above Perak Cave Temple, *S.C. Chin 999* (KLU); Perak, Bt. Kusan, *Wray 4254* (BM, SING). SUMATERA: Riau Prov., Tigapulu Mts, 5 km W of Talanglakat, on Rengat-Jambi road, Bk. Karampal area, *Burley et al. 1558* (A, BO, KEP, SING, US); Sumatera Utara, *Soedarsono 280* (BO, K); Sumatera Barat, Padang, Telung Kabung, *van Borssum Waalkes 1634* (A, BO, K, SING).

7. *Pothos versteegii* Engl.

Pothos versteegii Engl. Nova Guinea 8 (1910) 247; K. Krause, Nova Guinea 8 (1912) 805; K. Krause & Alderw., Nova Guinea 14 (1927) 210; Hay, Blumea 40 (1995) 409–411, fig. 4. — Type: Papua Barat, Mimika/Snow Mountains Prov., Noord River, Alkmaar, 17 Sep 1907, *Versteeg 1782* (B, holo; iso L).

Pothos brevispathus Ridl. ('*brevispatha*'), Trans. Linn. Soc. Lond. 9 (1916) 240. — Type: Papua Barat, Mimika Prov., Puncak Jaya (Mt Carstensz), Utakwa River, Camp 1, Nov/Dec 1912, *Bodeu Kloss s.n.* (BM, holo).

Pothos ledermannii Engl. & K. Krause, Bot. Jahrb. Syst. 54 (1917) 74. — Type: Papua New Guinea ('Kaiser Wilhelmsland'), W Sepik Prov., Sepik River, Hunsteinspitze, *Ledermaun 8333* (B, holo; iso BM, K).

Pothos ledermannii Engl. & K. Krause var. *caudatus* Engl. & K. Krause. ('*caudata*'), Bot. Jahrb. Syst. 54 (1917) 75. — Type: Papua New Guinea ('Kaiser Wilhelmsland'), W Sepik Prov., Sepik River, Etappenberg, 3 Oct 1912, *Ledermaun 9001* (B, holo).

Slender hemi-epiphytic root-climbing liane. Shoot system well-differentiated into adherent, non-flowering and free, lateral flowering branches; eocaul and seedling not observed. Leaves dull green, darker adaxially; petiole up to 6 × 1 cm when blade absent, otherwise very much reduced, $\frac{1}{16}$ to $\frac{1}{20}$ of the length of the blade, to 5 mm wide, flat and lamina-like, linguiform to narrowly lanceolate; blade 8–17 cm × 2–6 cm but very variable in size on a single shoot, narrowly ovate to oblong ovate to somewhat obovate, absent on early leaves of a sympodial module, tip somewhat acuminate, base tapering, acute to slightly retuse; primary lateral veins diverging from the midrib at c. 30–60°, intramarginal veins 1 or 2 (or 3) on each side, where more than one, the first arising near the base of the blade and running distally to the margin, the second arising about midway and running to the tip. Inflorescence solitary (at any one time) on leafless, perennial, sympodial, repeatedly-flowering, condensed short shoots in distal



Fig. 9. *Pothos versteegii*. a, fertile shoot in flower; b, fertile shoot in fruit; c, spadix; a, *Boden Kloss* s.n.; b-c, *Streimann* NGF 51738. Scale bar: a, b = 2 cm; c = 2 mm.

leaf axils (these persisting after leaf fall and some inflorescences thus on otherwise naked stem), 1–4 per leafy flowering shoot, subtended by a series of cataphylls, the longest to c. 8 mm long; peduncle to c. 2.5 cm long, slender, mostly rather abruptly upcurved near the base, deep purple. *Spathe* 2–3 × 4–5 mm, ovate, reflexed, tip mucronulate, creamy white to yellowish. *Spadix* sessile, c. 4–7 × 3–4 mm subspherical to ovoid, creamy white to yellowish. *Flowers* c. 1.5 mm diam, with 6 free tepals and 6 stamens. *Infructescence* with 1–6 berries; fruit c. 3.5 mm × 3 mm, small, subglobose to ovoid, minutely beaked, red when ripe; seeds not observed. — Fig. 9.

Distribution — *Malesia*: endemic to New Guinea (recorded rather sporadically and not in eastern parts of Papua New Guinea).

Habitat — Lowland to upper hill rainforest, 40–850 m altitude.

Note — A species easily distinguished by the very reduced petiole, small spadix and small fruits.

Other specimens examined: NEW GUINEA: PAPUA BARAT: Digul/Mimika Prov., van der Sande-Flusse (Beaufort River?), *Pulle* 360 (L). PAPUA NEW GUINEA: E Sepik Prov., Wagu, Ambunti, *Hoogland & Craven* 10404 (LAE); Western Prov., Yat, *NGF* 31973 (LAE); Western Prov., Kiunga, W of airstrip, *NGF* 34132 (L, LAE); Western Prov., Kiunga, *Streimann* *NGF* 51738 (CANB, K, L, LAE, US); Western Prov., Kiunga, 5 miles NW of Kiunga–Rumginae road, *Streimann & Katik* *LAE* 51862 (L, LAE, US).

8. *Pothos zippelii* Schott

Pothos zippelii Schott, *Ann. Mus. Bot. Lugd.-Bat.* 1 (1863) 131; Engl. in A. & C. DC., *Monogr. Phan.* 2 (1879) 86 & *Bot. Jahrb. Syst.* 25 (1898) 5 & in Engl., *Pflanzenr.* 21 (IV.23B) (1905) 32–34, fig.14; *Warb., Bot. Jahrb. Syst.* 13 (1891) 268; Hay, *Blumea* 40 (1995) 416–417, fig.4. — Type: 'New Guinea', *Zippel s.n.* (L, holo; iso K).

[*Pothos nigrescens* Zipp. ex Miq., *Ann. Mus. Bot. Lugd.-Bat.* 1 (1863) footnote & in *synon.* p. 131; nom superfl. pro *P. zippelii* Schott].

Pothos elegans Engl. *Bull. Soc. Tosc. Ortic.* 4 (1879) 267 & in Becc., *Malesia* 1 (1882) 262 & in Engl., *Pflanzenr.* 21 (IV.23B) (1905) 34–35. — Type: Papua Barat, Kepala Burung Prov., Arfak Mts, Hatam, *Beccari p.p.* 1875. (FI, holo; iso B).

Slender root-climbing liane or hemi-epiphyte. *Shoot system* well-differentiated into adherent climbing shoots and free lateral flowering branches; eocaul and seedling not observed. *Leaves* drying dull mid-green; petiole lamina-like, about $\frac{1}{4}$ – $\frac{2}{3}$ of the length of the blade, to c. 1.4 cm wide, distally rounded to slightly (to pronouncedly) auriculate; blade c. 6–12 × 2–3.5 cm, elliptic to ovate, tip somewhat to very acuminate, base rounded; primary lateral veins diverging at c. 30–45°, intramarginal veins 2 or 3 on each side of the midrib. *Inflorescence* solitary, rarely clustered, usually subtended by cataphylls on condensed short shoots in the axils of distal leaves, rarely terminal on leafy shoots; peduncle to c. 10 cm long, slender, sometimes gradually thickening distally. *Spathe* c. 1.2–3.5 cm × 6–8 mm, oblong-ovate to lanceolate, reflexed. *Spadix* sessile to minutely stipitate, to c. 1–2.5 cm long, ovoid-cylindric, c. twice as long as thick. *Flowers* c. 1.1 mm diam., with 6 free tepals and 6 stamens. *Fruit* obovoid, 6–9 mm long, red when ripe; seeds not observed. — Fig. 10.

Distribution — Solomon Islands (Bougainville). In *Malesia*: Maluku to New Guinea.

Habitat — Primary to secondary lowland to hill rainforest, 10–360 m altitude.

Note — A collection from near Jayapura, *McKee* 1911, has a stipitate spadix and much resembles the Australian *P. longipes* Schott (q.v.).



Fig. 10. *Pothos zippelii*. a, fertile shoot in fruit; b, fertile shoot in flower; c, leaves; d, adult adherent shoot; e, spadix detail; f, juvenile adherent shoot: a & e, van Royen 4030; b, Isles et al. 31481; c-d, de Vogel 3957; f, Jensen 256. Scale bar: a-d = 2 cm; e = 2 mm.

Other specimens examined: MALUKU: Halmahera, *Beguin* 2269 (BO); Aru Is., P. Koboer, Selibatabata, *Buwalda* 5277 (BO, K); Kasirocta Is., Batjan, *Curran* 349 (A); Halmahera, Ekor, Kali Dowora Ina, *de Vogel* 3126 (BO, L, MO); Bacan Is., G Tuara, near Amasing Kali, *de Vogel* 3957 (BO, K, L, MO); C Halmahera, Akelamo Oba, *de Vogel* 4403 (K, L, MO); P. Ceram, Camp 1, Wae Rocatan/Camp 2, Wae Toni, *Eyua* 3173 (BO); Aru Is., Papahula, *Jeusen* 256 (BO, C); P. Ceram, Wai Seru, *Kornassi* 1028 (BO); P. Ceram, Kanikeh (Kaniki), *Kornassi* 1391 (BO); Aru Is., *Moseley* (*Challenger Exped.*) s.n. (K); Obi Is., Laiwoei, Kg Baoe, *Nedi* 524 (BO); P. Ceram, *Suharno* 189 (BO); Halmahera Is., Jailolo Distr., Kg Pasir Putih, *Taylor* 263 (A), *Taylor* 383 (A, K); Halmahera Is., Tapayo, 20 km SE of Dodinga, Darco/Modul logging camp, *Whitmore et al.* 3662 (BO, K). NEW GUINEA: PAPUA BARAT: Biak Is., Sorida airstrip, *Brongersma* s.n. (L); Jayapura Prov., Jayapura ('Hollandia'), Kota Baru, *McKee* 1911 (K, L); Biak Is., 1 km NW of Mokmer airport, *Nicolson* 1593 (B, K, L, LAE, P, US); Kepala Burung Prov., road from Steenkool to Tembuni, km 4.8, *van Royen* 4030 (K, L, LAE). PAPUA NEW GUINEA: New Britain, W New Britain Prov., Hoskins, SE slopes Mt Uluwun, *LAE* 58597 (L, LAE); New Britain, W New Britain Prov., Gasmata, 2 miles W of Fulleborn Harbour, *Isles et al.* NGF 31481 (BRI, L, LAE, US); Gulf Prov., Mt Bosavi, N side, *Jacobs* 8986 (L); Bougainville, Buin, Kugumaru, *Kajewski* 1808 (BM, BRI, P); Milne Bay Prov., Raba-Raba, MI road to Mt Suckling (Manurep), *Katik* NGF 46898 (BRI, L, LAE, US); Mussau, *Koie & Olsen* 1512 (C, LAE).

9. *Pothos papuanus* Becc. ex Engl.

Pothos papuanus Becc. ex Engl. Bull. Soc. Tosc. Ort. 4 (1879) 267 & in Becc., Malesia 1 (1882) 261, t.16, figs 5-7 & Bot. Jahrb. Syst. 9 (1887) 193 & in K. Schum. & Hollrung, Fl. Kais. Wilh. Land (1889) 19 [p.p.; see under *P. zippelii*] & Bot. Jahrb. Syst. 25 (1898) 3 & in Engl., Pflanzenr. 21 (IV.23B) (1905) 34; Warb., Bot. Jahrb. Syst. 13 (1891) 267; Alderw., Bull. Jard. Bot. Buitenzorg III, 4 (1922) 337; K. Krause & Alderw., Nova Guinea 14 (1927) 211; Hay, Blumea 40 (1995) 415-416. — Type: Papua Barat, Kepala Burung Prov., Segun ('Sangion') Bay, 9 Apr 1872, *Beccari* p.p. 16 (Fl, holo).

Pothos albertisii Engl. Bull. Soc. Tosc. Ort. 4 (1879) 267 & in Becc., Malesia 1 (1882) 262, t.16, figs 8 & 9 & Bot. Jahrb. Syst. 25 (1898) 4 & in Engl., Pflanzenr. 21 (IV.23B) (1905) 34; K. Schum. & Hollrung, Fl. Kais. Wilh. Land (1889) 19; K. Schum. & Lauterb., Fl. Schutzgeb. Südsee (1901) 209; K. Krause, Nova Guinea 8 (1912) 805; K. Krause & Alderw., Nova Guinea 14 (1927) 211; Hay in Johns & Hay, Stud. Guide Monocot. Papua New Guinea 1 (1981) 66, fig. 27 & Aroids of Papua New Guinea (1990) fig. 32, pl.14 a & c. — Type: Papua New Guinea, Western Prov., Fly River, 1879, *d'Albertis* s.n. (Fl, holo; iso B).

Pothos quinquevenosus Alderw., Bull. Jard. Bot. Buitenzorg III, 4 (1922) 336; K. Krause & Alderw., Nova Guinea 14 (1927) 210. — Type: Papua Barat, Bonggo Range, Mamberamo, nr Prauwen Bivak, 5 May 1890, *Lam* 1041 (BO, holo, photo LAE, NSW; iso L).

Vigorous slender root-climbing liane or hemi-epiphyte. *Shoot system* well-differentiated into adherent climbing shoots and free lateral flowering branches; eocaul and seedling not observed. *Leaves* pale green, drying dull greyish green; petiole c. 4-8 cm long, to c. 2 cm wide, lamina-like, c. 1/3 the length of to equalling the blade, distally truncate to strongly auriculate, rarely rounded; blade c. 6-12 × 1.2-3.5 cm, narrowly elliptic to (ob)lanceolate, tip tapering to a point but hardly acuminate, base rounded; primary lateral veins diverging at c. 30°, intramarginal veins 2-5 on each side of the midrib, the inner ones arising about midway along its length. *Inflorescence* solitary or occasionally clustered (to three together), usually lateral on a (sometimes sympodially branched) short shoot in distal leaf axils and subtended by cataphylls, the last and longest of these c. 3 cm long, rarely terminal on a leafy shoot; peduncle to c. 9 cm long, mostly rather robust, gradually increasing in thickness distally, purple-black. *Spathe* to c. 4 × 1.2 cm, 1/3 to c. 4/5 the length of the spadix, reflexed, oblong-ovate to oblong-lanceolate, pale green to purplish brown. *Spadix* sessile, 2-4 cm × 3-4 mm,

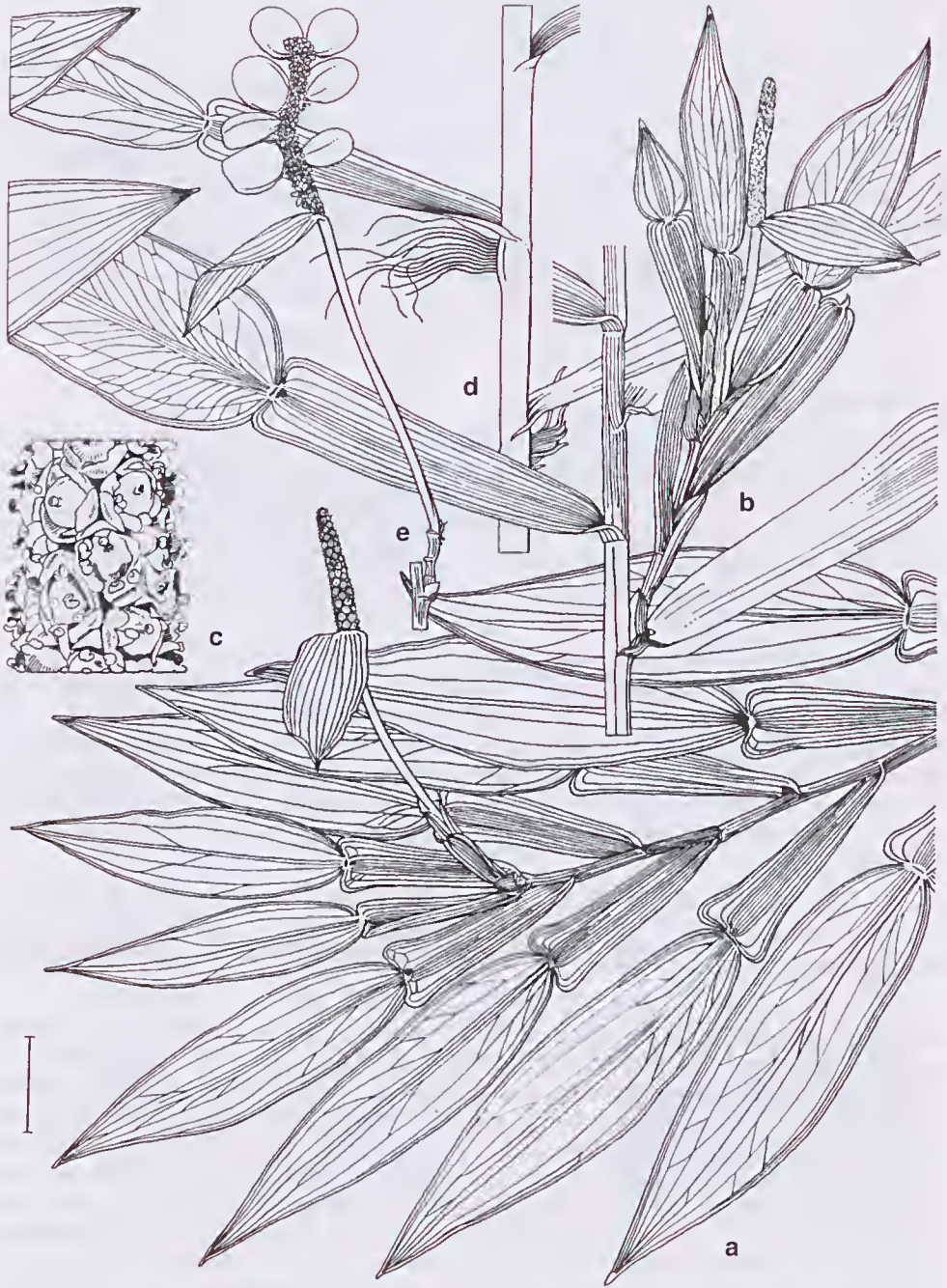


Fig. 11. *Pothos papuanus*. a, fertile shoot in flower; b, fertile shoot in fruit; c, spadix detail; d, adult adherent shoot; e, infructescence: a, c & e, Nicolson 1561; d, Main 460. Scale bar: a, b, d, e = 2 cm; c = 2.7 mm.

usually more than six times as long as thick, cylindrical to somewhat tapering, blunt-tipped, yellow. *Flowers* c. 1.1 mm diam, with 6 free tepals and 6 stamens; fruit to 2 cm × 9 mm, ovoid, ripening through yellow to deep red; seeds not observed. — Fig. 11.

Distribution — Solomon Islands. In *Malesia*: widespread in New Guinea.

Habitat — Well-drained to swampy, primary to secondary lowland to lower montane rainforest, up to 1500 m altitude.

Notes — *Pothos papuanus* manifests a wide range of vigour, with *P. quinquevenosus* and *P. albertisii* falling within the range.

The young shoots and fruits are reported to be edible after cooking.

Other specimens examined: NEW GUINEA: PAPUA BARAT: Biak, Yapen Is., Sarurai, near Serui, *Aet & Idjan* 187 (BO); Jayapura Prov., Taritatau ('Idenburgh') River, Bernhard Camp, *Brass* 13943 (A, BRI, L, MO), *Brass* 13958 (A, BRI, L); Jayapura Prov., Bonggo Range, nr Albatross Bivak, *Docters van Leeuwen* 9661 (BO), *Docters van Leeuwen* 11370 (BO, K, L, SING); Jayapura Prov., Jayapura ('Hollandia'), *Gjellerup* 512 (L); Napan Prov., Cenderawasi, Wati, *Ijiri & Niinura* 632 (L); Jayapura Prov., Jayapura ('Hollandia'), Tami-Moding, *Kalkman* 3429 (L, LAE); Jayapura Prov., Bonggo Range, Mamberamo, nr Prauwen Bivak, *Lam* 955 (L), *Lam* 1036 (L); Kepala Burung Prov., Sorong, Remoe, *Main* 460 (A, BO, SING); Jayapura Prov., Taritatau (Idenburgh) River, Bernhard Camp, *Meijer Drees* 309 (BO, K, L), *Meijer Drees* 324 (A, BO, K, L); Jayapura Prov., Lake Sentani, near Jayapura ('Hollandia') airport, *Nicolson* 1561 (B, K, L, LAE, P, US). PAPUA NEW GUINEA: E Sepik Prov., Sepik River, *Bateson* 15 (K); Milne Bay Prov., Maneau Range, Mt Dayman, *Brass* 23440 (LAE); Morobe Prov., Sattelberg, Boanga, *Clemens* 8127 (B); Morobe Prov., Manki Ridge, *Coim & Kairo* 147 (L, LAE); Madang Prov., Aiome to Ramu River, *Coode & Katik*, NGF 32785 (K, L, LAE); Madang Prov., Road E of Aiome, *Frodin* NGF 26941 (L, LAE, US); E Sepik Prov., 'Kaiser Wilhelmsland', Augusta River, *Hollrung* 637 (K); Morobe Prov., Golden Pines logging road, *LAE* 62112 (LAE); E Sepik Prov., 'Kaiser Wilhelmsland', Jagei River, *Lauterbach* 533 (B); E Sepik Prov., Angorani, Mindimbit, near Timbunke, Sepik River, *Leach* NGF 34273 (LAE, NSW, US); E Sepik Prov., 'Kaiser Wilhelmsland', Sepik River, *Ledermann* 6717a (K); E Sepik Prov., 'Kaiser Wilhelmsland', Sepik River, *Ledermann* 7176 (K); Western Prov., Kiunga, Fly River, *Millar* NGF 35464 (A, BRI, CANB, K, L, LAE, US); Madang Prov., Wabba ('Wabbe'), *Schlechter* 16391 (P); Madang/Eastern Highlands, Raniget, *Schlechter* 17686 (P); Madang/Eastern Highlands Prov., Ramu River (Keneyia), *Schlechter* 18353 (P); E Sepik Prov., Ambunti, *Townsend* 102 (LAE). SOLOMON ISLANDS: Santa Ysabel, SW Santa Ysabel, Pilema Bay, *Bear's collectors* BSIP 6496 (BSIP, K, L, LAE, SING); Guadalcanal, W Guadalcanal, Vuragob area, Wanderer Bay, *Boraule et al.* BSIP 9052 (BSIP, K, L, LAE, SING); Guadalcanal, SW Guadalcanal, Wandered Bay area, *Fa'arodo et al.* BSIP 12164 (BSIP, K, L, LAE, SING); Malaita, SE Malaita, Su'u area, *Mauriasi et al.* BSIP 13536 (BSIP, K, L, LAE, SING); Guadalcanal, NC Guadalcanal, Tina - Toni River area, *Nakisi & Babala* BSIP 8240 (BSIP, K, L, LAE, SING); Guadalcanal, SE Guadalcanal, Avu Avu Mission Station, *Rumikera et al.* BSIP 9916 (BSIP, K, L, LAE, SING); New Georgia, *Waterhouse* 302 (BRI, K, NSW).

10. *Pothos longipes* Schott

Pothos longipes Schott, Aroideae (1856–1857) 23, t. 47 & Prodr. Syst. Aroid. (1860) 568–569; F. Muell., Fragm. Phytogr. Austr. 8 (1874) 187; Engl. in A. & C. DC., Monogr. Phan. 2 (1879) 87 & Bot. Jahrb. Syst. 25 (1898) 4 & in Engl., Pflanzenr. 21 (IV.23B) (1905) 36; F.M. Bailey, Comprehensive Cat. Queensland Pl., (1913) 579; Domin, Biblioth. Bot. 20 (85,4) (1915) 502; C.T. White, Contrib. Arnold Arb. 4 (1933) 12; Evans, Contrib. N.S.W. Nat. Herb. Flora Series 21–22 (1962) 8; Rotherham et al., Fl. Pl. N.S.W. & Queensland (1975) 107, pl. 337; Williams, Native Pl. Queensland 1 (1979) 242, unnumbered plate & 3 (1987) 260, unnumbered plate; Beadle, Stud. Fl. NE N.S.W. (1987) 969, fig.424A; Jones & Gray, Climbing Pl. Austr. (1988) 312, unnumbered plate p.320; Stanley in Stanley & Ross, Fl. SE Queensland 3 (1989) 271; Hay in Harden, Fl. N.S.W. 4 (1993) 32, unnumbered fig. & *Blumea* 40 (1995) 413–415. — Type: Australia, New South Wales, Port Macquarie, Wilson River, *Backhouse s.n.* (K, holo).

Pothos australasicus F. Muell., *Fragm. Phytogr. Austr.* 1 (1858) 62; Schott, *Bonplandia* 7 (1859) 104. — Type: Australia, Queensland, Pine River, *Hill s.n.* (MEL, lecto, selected by Hay (1995)).

[*Pothos cylindricus* sensu auct. non C. Presl: Benth., *Fl. Austr.* 7 158 (1878) 104, in synon.]

[*Pothos loureiroi* ('*loureirii*') sensu auctt. non Hook. & Arn.: Benth., *Fl. Austr.* 7 (1878) 158; F.M. Bailey, *Syn. Queensland Fl.* (1883) 570 & *Queensland Fl.* 5 (1902) 1698; Moore & Betche, *Handb. Fl. N.S.W.* (1893) 429].

Pothos brownii Domin, *Fedde Rep.* 10 (1911) 58 & *Biblioth. Bot.* 20 (85,4) (1915) 501; F.M. Bailey, *Comprehensive Cat. Queensland Pl.* (1913) 579. — Type: Australia, Queensland, Rockingham Bay, *Dallachy s.n.* (K, lecto; isolecto MEL, selected by Hay (1995: 413)).

Slender to moderately robust, very variable as to vigour, root-climbing liane or hemi-epiphyte. *Shoot system* well-differentiated into adherent, climbing shoots and free, lateral flowering branches; eocaul not observed; seedling with congested leaves similar in shape to adult, becoming progressively larger as shoot extends. *Leaf* rather glossy dark green above, paler to somewhat yellowish beneath; petiole 2–12 cm × 4–14 mm, usually exceeding the blade in length, oblanceolate, distally rounded to truncate to strongly auriculate; blade 1.5–15 cm × 3–15 mm, elliptic to narrowly lanceolate, somewhat acuminate-tipped, base rounded; primary lateral veins diverging at c. 30–40°, intramarginal veins 1 or 2 (or 3) on each side of the midrib. *Inflorescence* solitary, less commonly paired, in the axils mostly of distal leaves of a flowering branch and subtended by cataphylls, rarely terminal on leafy branchlets; peduncle rather stout, c. 2–5 cm long. *Spathes* c. 1.5–4 cm × 5–9 mm, ± lanceolate, wide opening to reflexed, purple-black to greenish. *Spadix* stipitate, more rarely sessile; stipe to c. 3 cm long and sometimes subequalling the spadix in length (particularly in individuals of very slender dimensions); fertile portion of spadix to c. 6 cm long, slender to rather stoutly cylindrical, yellow to purplish. *Flowers* c. 1.3 mm diam., with 6 free tepals and 6 stamens. *Infructescence* with many berries; fruit 8–13 mm long, ovoid, red when ripe; seeds not observed. — Fig. 12.

Distribution — Eastern Australia, from northeastern Queensland to the New South Wales North Coast region.

Habitat — In rainforest at low altitudes in the southern part of the range, extending, in warmer latitudes, into montane forest to c. 1000 m alt.

Notes — *Pothos longipes* is evidently closely related to *P. papuanus* (q.v.), differing from it chiefly in the petiole usually being longer than the blade (though this is rarely the case in *P. papuanus*, and rarely not the case in *P. longipes*), and in the usually stipitate spadix (though likewise this is rarely the case in *P. papuanus* and rarely not the case in *P. longipes*). There is rather wide geographical disjunction between the two, and some ecological differentiation, i.e., tolerance of cooler climates in *P. longipes*.

The relationship to *P. cylindricus* is clearly close, although *P. longipes* is readily distinguished by the stipitate spadix and by the inflorescences arising in the axils mostly of distal leaves of a flowering branch, only rarely terminal on leafy branchlets.

Engler (1905) grouped *P. longipes* with *P. cylindricus* in his series *Longipedes*, separated from the other three series of subgenus *Pothos* by the presence of foliage leaves on the ultimate flowering branches between the basal cataphylls and the terminal inflorescence. Engler (1879) had made a similar grouping earlier but without erecting formal supraspecific taxa at that rank. In other series the inflorescence is immediately subtended by cataphylls, and is considered lateral to the leafy branch that bears it. This distinction breaks down in *P. longipes* where one may find in the same specimen

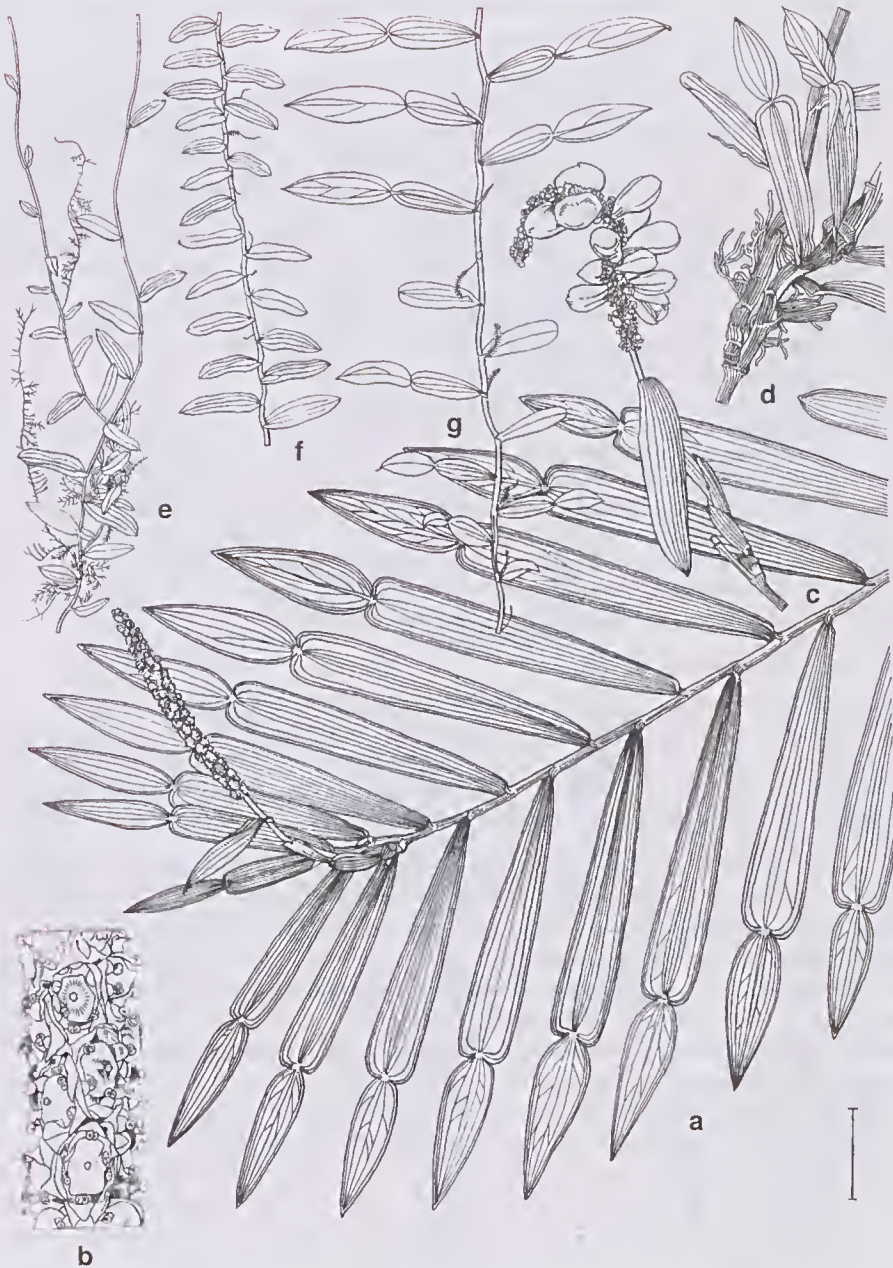


Fig. 12. *Pothos longipes*. a, fertile shoot; b, spadix detail; c, infructescence; d, adult adherent shoot, branching detail; e-g, juvenile adherent shoots of increasing maturity: a-b, Brass 20179; c, Kajewski 1432; d, Helms 1155; e-g, Blake 21595. Scale bar: a, c-g, = 2 cm; b = 3.5 mm.

inflorescences immediately subtended by cataphylls and borne laterally on a leafy shoot, and inflorescences with foliage leaves between the spathe and the cataphylls. While it may thus appear that the inflorescence is lateral or terminal in this species, in fact inflorescences are always terminal on the shoots that bear them but (foliage) leaves may or may not develop on those shoots.

Selected other specimens examined (this species has been collected on very numerous occasions): AUSTRALIA: NEW SOUTH WALES: Dorrigo, *Boorman s.n.* (L, NSW); Hastings River, *Fraser s.n.* (BM, NSW); Wide Bay, Dunnbirrbin River, *Leichliard 246* (P); Bruxner Park, near Coffs Harbour, *Martin s.n.* (K), Red Scrub, by Rocky Creek, foot of Nightcap Range, *Melville 3321A* (K, MEL); E Dorrigo plateau, Never Never Creek, *Melville 3389* (K, MEL, NSW); Clarence River, *Moore 132* (K); Tweed Range, Wiangaree S.F., *Schodde 5617* (BRI, CANB, K, L, MEL, NSW, US); QUEENSLAND: Mt Glorious, *Blake 21595* (BRI, MO); Rockhampton, *Bailey s.n.* (MO); N Kennedy Distr., foot of Mt Bartle Frere, near Josephine Creek, *Blake 9807* (BRI, K, L); Mt Glorious, *Blake 12686* (BRI, K); Cook Distr., Boonjee, near Malanda, *Blake, 15253* (A, BRI); Moreton Distr., McPherson Range, *Blake 15383* (A); Wide Bay Distr., Montville, *Blake 15389* (BRI, K); N Kennedy Distr., near Tully, along Jarra Creek, *Blake 19710* (A, BRI, K, L); Cook Distr., Mossman, entrance to Mossman Gorge, *Blake 19755* (BRI, K); Cape York Peninsular, Upper Parrot Creek, Annan River, *Brass 20179* (A, BRI, K, L); Dalrymple Heights, *Clemeus s.n.* (A, K); Along road from Atherton to Main Coastal Highway, along Palmerston Highway, Henrietta Falls, *Croat 52597* (MO); Mt Dryander, *Fitzalan s.n.* (K); Pine River, Hill s.n. (K); Currumbin beach, *Jackson s.n.* (K); Daintree River, *Kajewski 1432* (A, BRI, K, P); Montville, Blackhall Range, N of Brisbane, *Longman s.n.* (K); Conondale Range (State Forest 274 Conondale), Bundaroo logging area, near Funnels Hut road, *McDonald & Williams 3664* (BRI, K); D'Aguilar Range near Mt Glorious, *Moriarty 873* (BRI, CANB, K); Mackay ('Port Mackay'), *Nernst s.n.* (K); Mt Wolvi, c. 15 km NE of Kin Kin, *Sharpe 4534* (BRI, NSW); Mudgeeraba, *Stirley s.n.* (BRI, US); Trinity Bay, *von Mueller s.n.* (MEL, SING); Pine River, *von Mueller s.n.* (A); Armidale, Parrot, *von Mueller s.n.* (K); Davies Creek, *Webb & Tracey 5575* (BRI, NSW).

11. *Pothos cylindricus* C. Presl

Pothos cylindricus C. Presl, Epimel. Bot. (1851) 243; Schott, Aroideae (1856–1857) 23, t.48 & Prodr. Syst. Aroid. (1860) 569; Miq., Flora Ned. Indië 3 (1856) 180; Engl. in A. & C. DC, Monogr. Phan. 2 (1879) 86–87 & in Engl., Pflanzenr. 21 (IV.23B) (1905) 36; Merr., Enum. Philippine Pl. 1 (1922) 172. — Type: Philippines, Manila, 1836–1839, *Cuming 914* (PRG, holo; iso BM, E, FI, G, K, L, MO, P).

Slender to moderately robust, root-climbing liane. *Shoot system* well-differentiated into adherent, climbing shoots and free, lateral flowering branches; eocaul not observed; seedling with congested leaves similar in shape to adult, but with blade elliptic and as long as petiole, becoming progressively larger as shoot extends. *Leaf* dull pale green above; petiole 2–15 cm × 7–14 mm, exceeding the blade in length, oblanceolate, distally rounded to truncate to auriculate; blade (0.3–)1.5–5.5 cm × (2–)3–25 mm, elliptic to narrowly lanceolate, somewhat acuminate-tipped, base rounded; primary lateral veins diverging at c. 30–40°, intramarginal veins 2 (or 3) on each side of the midrib. *Inflorescence* solitary, terminal on leafy branchlets; peduncle rather stout, c. 2–5 cm long. *Spathe* c. 6–11 cm × 6–10 mm, ± lanceolate, wide opening to reflexed, purple-black to greenish. *Spadix* sessile, 4.8–12 cm × 5–9 mm, rather stoutly cylindrical, brownish purple. *Flowers* c. 1.3 mm diam., with 6 free tepals and 6 stamens. *Inflorescence* with many berries, usually twisted; fruit 1–2 cm × c. 8 mm long, obovoid, red when ripe; seeds ellipsoid, c. 1 cm × 6 mm, mid-brown. — **Fig. 13.**

Distribution — *Malesia*: Borneo (two records, both from Sabah), Sulawesi (a single record from Morowali prov.) and the Philippines (widespread).

Habitat — Primary and secondary lowland to upper hill forest, often in well-drained positions, 40–900 m altitude.

Note — Very close to *P. longipes*, but readily distinguished by the sessile spadix and in flowering only terminally on leafy branches (c.f. *P. longipes*). *Pothos cylindricus* is

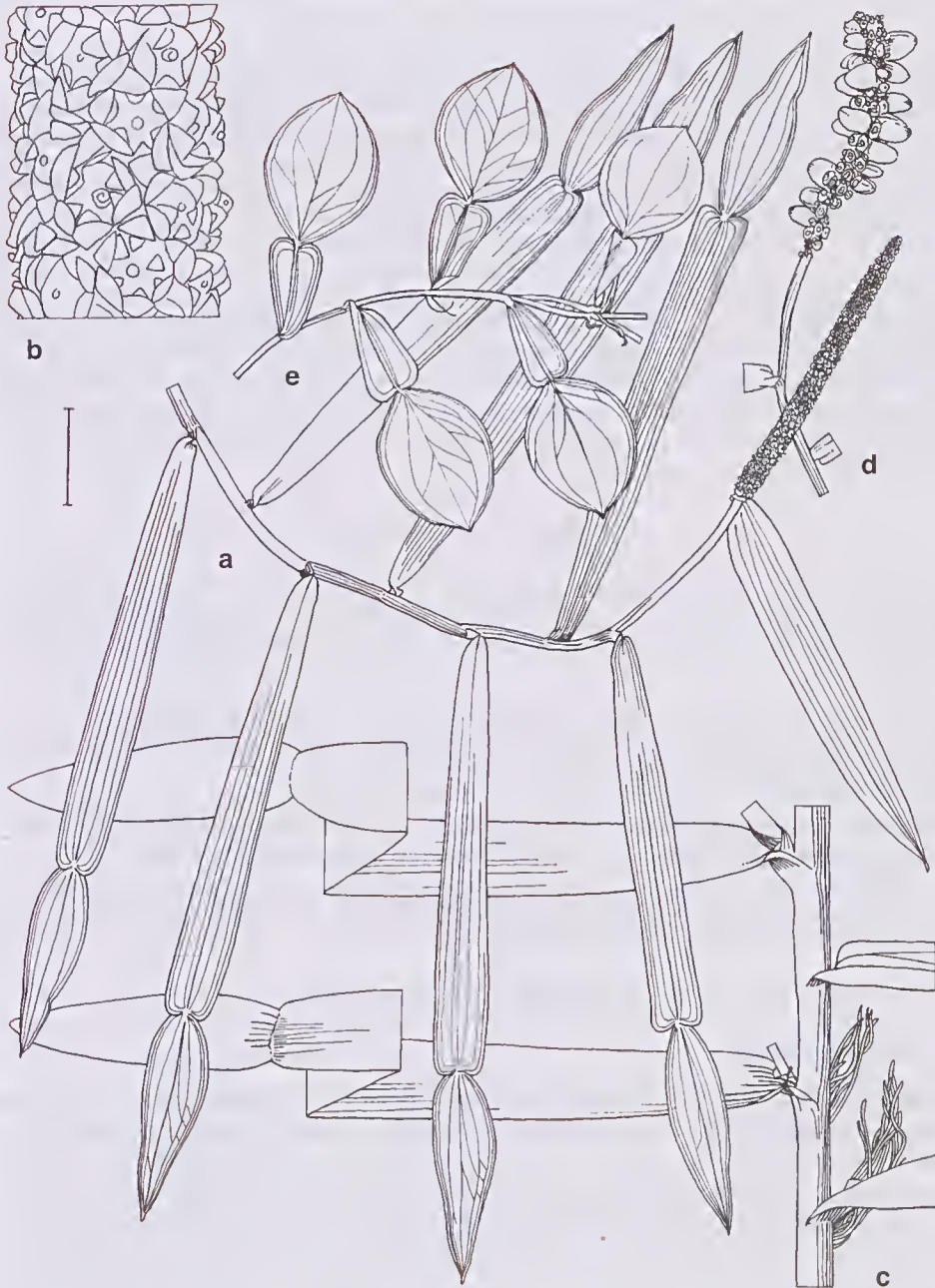


Fig. 13. *Pothos cylindricus*. a, fertile shoot; b, spadix detail; c, adult adherent shoot; d, infructescence; e, juvenile adherent shoot: a-b, Nicolson 707; c, Nicolson 720; d, Wenzel 387; e, Nicolson 817. Scale bar: a, c-e = 2 cm; b = 2.5 mm.

evidently also very near to *P. papuanus* (also with a sessile spadix) although separable by the inflorescence always terminal on a leafy shoot (usually lateral on a sometimes sympodially branched short shoot in distal leaf axils in *P. papuanus*) and the spathe lanceolate (oblong-ovate to oblong-lanceolate in *P. papuanus*).

Other specimens examined: BORNEO: SABAH: Kinabatangan, Tamegang timber camp, near K. Pangkaian, *Kokawa & Hotta* 1300 (K, KYO, P); Lahad Datu, Danum valley, side of tractor path cut in 1989, *Maikin & Lideli* SAN 131103 (E, SAN). PHILIPPINES: Samar, Kadapnan, Bo. Bantayan, Oras, *Castro & Arionuevo* PNH 5721 (A, PNH); Luzon, Sorsogon, *Curran* FB 12250 (K, US); Negros, Negros Oriental, Sibulan, Malunggo Sur, *Edaño* PNH 6774 (PNH); Luzon, Sorsogon Prov., Mt Juban, *Edaño* PNH 37154 (BM, K, PNH); Luzon, Sorsogon, Irosin (Mt Bulusan), *Edaño & Gutierrez* PNH 37822 (A, PNH); Leyte, Leyte Prov., Palo, *Elner* 7240 (A, E, K); Luzon, Camarines Sur, Mt Isarog, *Madulid* 6776 (MO); Luzon, Albay Prov., Mt Mayon, *Madulid & Reynoso* PNH 121125 (PNH); Panay, Antique Prov., *McGregor*, BS 32451 (SING); Mindanao, Davao Prov., Compostela, Maparar Barrio, 70 km NE of Davao, *Nicolson* 707 (US); Mindanao, Davao Prov., Bagio, Mr Onglonto's land, *Nicolson* 713 (US); Mindanao, Davao Prov., Mampising, behind Apocon School, *Nicolson* 720 (US); Luzon, Sorsogon, Mt Bulusan, SE side, near Lake Bulusan, *Nicolson* 759 (US); Leyte, Putok Barrio, near lumber camp about 22 km SW of Tacloban, *Nicolson* 817 (US); Mindanao, Davao Prov., Mayo Bay, *Piper* BS 481 (US); Luzon, Camarines, Sagnay, *Ramos* BS 22143 (K, US); Leyte, *Weuzel* 387 (BM, MO, US); Mindanao, Davao Prov., Santa Cruz, *Williams* 2937 (K, US). SULAWESI: Morowali Prov., *Grimes* 1217 (BM, K).

Subgenus *Allopothos*

Pothos subg. *Allopothos* Schott, Aroideae (1856–1857) 24. — *Pothos* sect. *Allopothos* Engl. in A. & C. DC., Monogr. Phan. 2 (1879) 88. — Type: *Pothos cunninghamii* Schott (lecto selected here; = *P. inaequilaterus*). [The first species treated under *Allopothos* by Schott (loc. cit.)].

Pothos series *Longivaginati* Engl. in Engl., Pflanzenr. 21(IV.23B) (1905) 22. — Type: *Pothos inaequilaterus* (C. Presl) Engl. (lecto selected here). [The first species treated under *Longivaginati* by Engler (loc. cit.)].

Pothos series *Brevivaginati* Engl. in Engl., Pflanzenr. 21(IV.23B) (1905) 22. — Type: *Pothos thomsonianus* Schott. [The only species Engler recognised in the series].

Pothos series *Goniuri* (C. Presl) Engl. in Engl., Pflanzenr. 21(IV.23B) (1905) 22. — Type: *Pothos luzouensis* (C. Presl) Schott. [The type of *Goniurus* C. Presl].

'*Allopothos* Supergroup'

12. *Pothos tener* Wall.

Pothos tener Wall. in Roxb., Fl. Ind. 1 (1820) 454 ('*tenera*'). — *Scindapsus arborum* C. Presl, Epimel. Bot. (1851) 242. — *Scindapsus tener* (Wall.) C. Presl, Epimel. Bot. (1851) 242. — [*Pothos gracilis* Roxb., Fl. Ind. 1 (1820) 454; Schott, Aroideae (1856–1857) 24, t.52 & Prodr. Syst. Aroid. (1860) 572–573; Miq., Flora Ned. Indië 3 (1856) 181–182; Engl. in A. & C. DC., Monogr. Phan. 2 (1879) 91–92, nom. illeg., non *Pothos gracilis* Rudge (1805)]. — Type: *Adpendix arborum* Rumph., Herb. Amb. 5 (1747) t.181, fig.2, see below.

Pothos rumplii Schott in Schott & Endl., Melet. Bot. (1832) 21 & Aroideae (1856–1857) 24 & Prodr. Syst. Aroid. (1860) 572; Engl. in A. & C. DC., Monogr. Phan. 2 (1879) 89–90 & Bull. Soc. Tosc. Ort. 4 (1879) 267 & in Becc., Malesia 1 (1882) 263 & Bot. Jahrb. Syst. 25 (1898) 4; K. Schum. & Lauterb., Fl. Schutzgeb. Südsee (1901) 210; Engl. in Engl. Pflanzenr. 21 (IV.23B) (1905) 38–39, Fig.16; Engl. & K. Krause, Nova Guinea 8 (1910) 247; Merr., Enum. Philippine Pl. 1 (1922) 173; Elmer, Leaf. Philippine Bot. 10(133) (1938) 3628; Hay in Johns & Hay, Stud. Guide Monocot. Papua New Guinea 1 (1981)

fig.28; Peekel ex Henty, Fl. Bismarck Archip. (1984) 66, fig.108; Hay, Aroids of Papua New Guinea (1990) fig.33; Hay, Blumea 40 (1995) 402–404. — *Scindapsus ruuphii* (Schott) C. Presl, Epimel. Bot. (1851) 242. — Type: *Adpendix porcellanica* Rumph., Herb. Amboin. 5 (1747) t.182, fig.1.

Pothos ruuphii Schott var. *giganteus* Engl. Bot. Jahrb. Syst. 25 (1898) 4; K. Schum. & Lauterb., Fl. Schutzgeb. Südsee (1901) 210; Engl. in Engl., Pflanzenr. 21 (IV.23B) (1905) 38–39; Engl. & K. Krause, Nova Guinea 8 (1910) 247. — Type: Papua New Guinea, Madang Prov., Gogol River, *Lauterbach* 932 (SING, lecto, selected by Hay (1995)).

[*Pothos insignis* auctt. non Engl. Bull. Soc. Tosc. Ort. 4 (1879) 267; Engl. in K. Schum. & Hollrung, Fl. Kais. Wilh. Land (1889) 19 & in K. Schum., Notizbl. Königl. Bot. Gart. & Mus. Berl.-Dahlem 2 (1898) 99; Warb., Bot. Jahrb. Syst. 13 (1891) 267.].

Very robust and vigorous, sometimes smothering, moderately ramified homeophyllous root-climbing liane reaching into the crowns of canopy trees. *Shoot system* rather poorly differentiated into adherent and flowering branches; stem of mature sterile shoot to 2 cm diam., internodes up to 35 cm long, terete in cross-section; stem of juvenile shoot to 4 mm diam., terete in cross-section with the leaves slightly congested to scattered, the petioles weakly ascending, and the blades pendulous; eocaul foraging and climbing, often very long. *Leaves* rich green, glossy above, stiffly chartaceous, drying pale grey-yellowish green; petiole 9–16.5 × 0.3–1.2 cm, stout, sheath prominent, reaching to the base of apical geniculum; blade 15–50 × 5–19 cm, pendulous, elliptic to ovate-oblong, tip somewhat acuminate to obtuse, ultimately with a flexuous filiform mucro, base acute; primary lateral venation diverging at c. 60–80°, crossed by usually three intramarginal veins on each side of the midrib, these arising from near the base of the midrib and running more or less to the leaf tip. *Inflorescence* solitary at the end of leafy, pendulous shoots; peduncle 10–20 × 0.2–0.5 cm, about equaling the petiole of the subtending leaf, most of it within the sheath at flowering, but extending up to twice original length in fruiting specimens. *Spathe* 11–27 × 1–5 cm, somewhat exceeding the spadix, narrowly lanceolate, distally somewhat twisted, membranous, green. *Spadix* conspicuously stipitate; stipe 2–4 × 0.15–0.25 cm; fertile portion 10–22 × 0.35–0.8 cm, long-cylindrical, brownish green at flowering. *Flowers* c. 2.5 mm diam. with (4)–6 free to fused tepals and (4)–6 stamens. *Infructescence* considerably elongated, to 40 cm long, pendulous, often twisted, with very many berries; fruit to c. 2.5 × 1.5 cm, ovoid, scarlet when ripe; seeds c. 3 × 6 mm ellipsoid. — Fig. 14, 15.

Distribution — Solomon Islands and Vanuatu. In *Malesia*: Sulawesi, Maluku, New Guinea. One of us (A.H.) observed this species in Vanuatu in 1989, but we are not aware of any herbarium material.

Although very widespread and common east of Wallacea, this species is not found in Australia. In the Philippines it is replaced by *P. dolichophyllus* and *P. ovatifolius*, and in Borneo and further west by *P. ovatifolius*.

Habitat — In a wide range of situations, most commonly in lowland rainforest and regrowth but also found in upper hill forest and in sago palm swamp, and on limestone, sea-level to 1000 m altitude. In New Guinea it is very common in the lowlands, especially in disturbed forests, often almost completely covering trees and hanging to the ground.

Notes — *Pothos tener* is based on figure 2 of Rumphius' plate of *Adpendix arborum*, a depiction of a Moluccan plant. It is evidently a somewhat depauperate form of, but otherwise compatible with the plant hitherto more widely known as *Pothos ruuphii*, as the illustration matches no other known Moluccan *Pothos*.

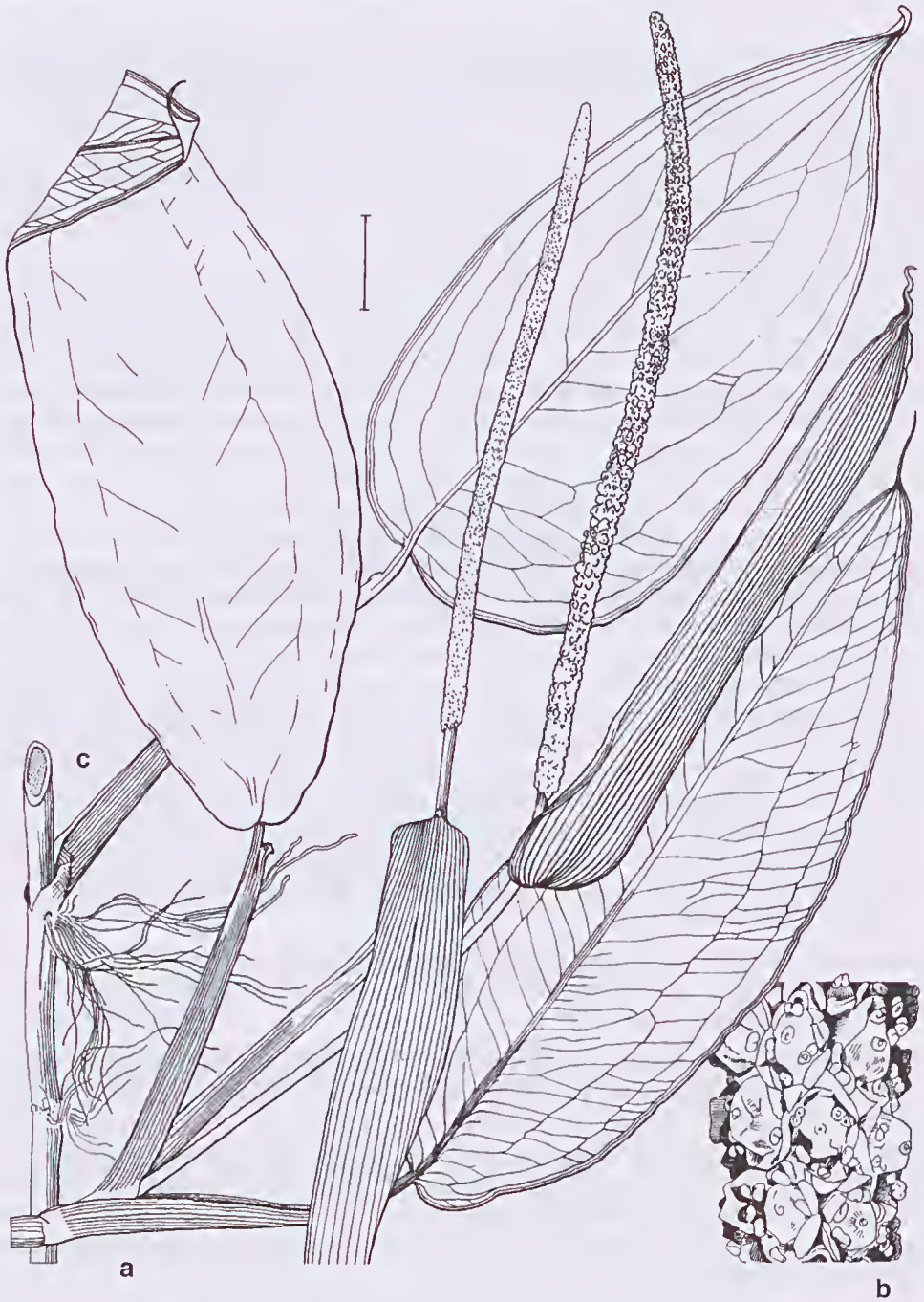


Fig. 14. *Pothos tener*. a, fertile shoot in flower and early fruit; b, flowering spadix detail; c, adult adherent shoot: a, b, *Burley et al.* 3569; c, *Nicolson* 1566. Scale bar: a, c = 2 cm; b = 3.2 mm.

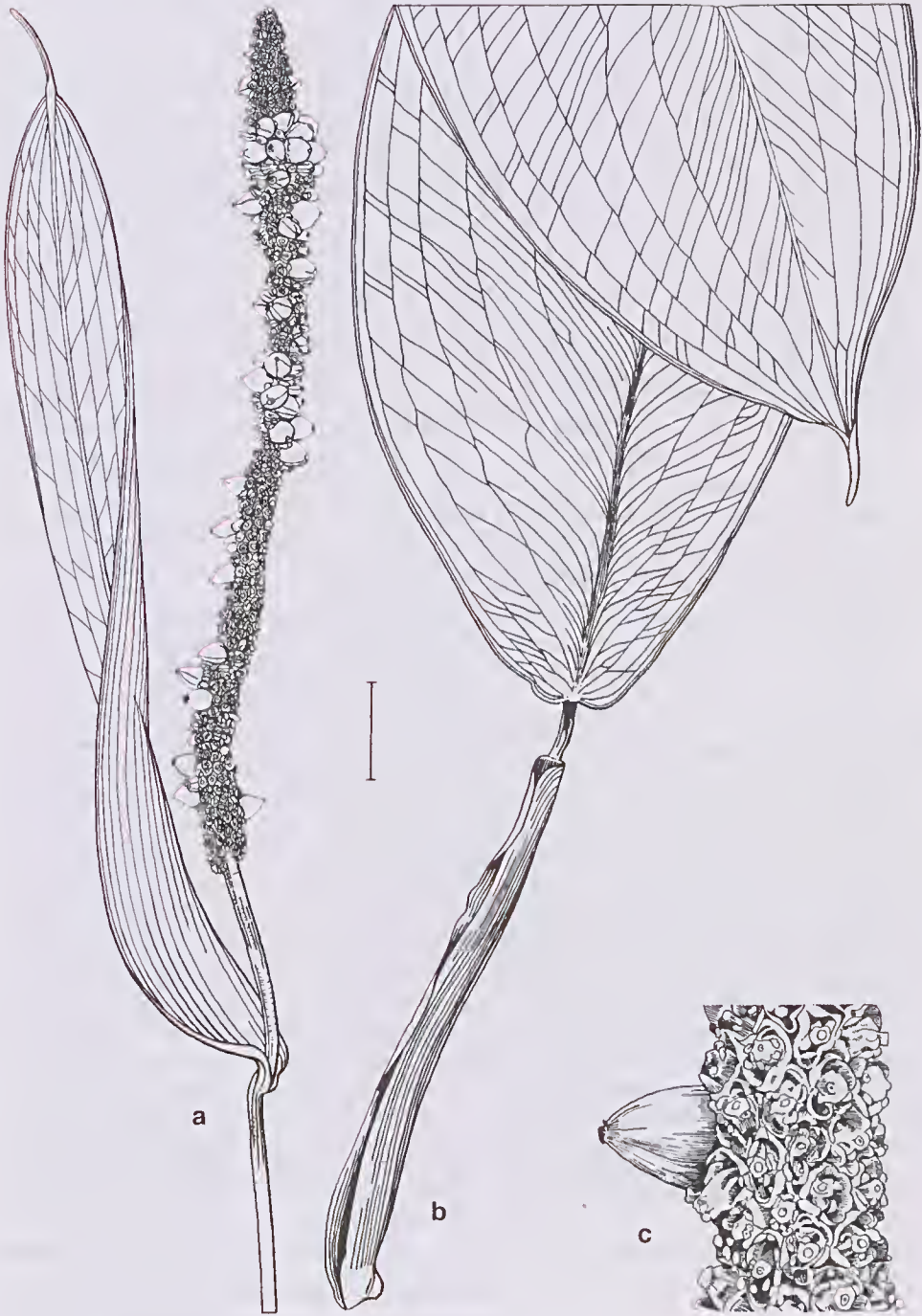


Fig. 15. *Pothos tener*. a, infructescence; b, fruiting spadix detail; c, leaf: a-b, Johns 7676; c, Dransfield et al. 7562. Scale bar: a, c = 2 cm; b = 5 mm.

Evidently very closely related to *P. dolichophyllus* and *P. ovatifolius* (both Sundaic and absent from Wallacea/Sahul), *P. tener* is readily separable from the former by the long-stipitate spadix and from the latter by the more thinly textured oblong leaf blade.

Other specimens examined: SULAWESI: Minahassa, Kelelonde, Sopotan Mts, *Alston* 15831 (BM); Menado, Palu, *Bloembergen* 4032 (BO); No further information, *Brook* 16876 (BM); N Sulawesi, c. 220 km W of Menado, km 50 inland from Pangl on Sg. Ilanga, *Burley et al.* 3569 (A); N Sulawesi, 250 km W of Gorontalo, 7k km inland from Papayuto, tributary of Sg. Papayuto, *Burley et al.* 4136 (A, BO, K); C Sulawesi, Donggala, Pangl-Binangga N.R., Puncak Beringin Study Area, *Bynum* 7500 (A, K); Kabon Kopi, *Curran* 3448 (A, US); Kabupaten Kotamobago, G. Ambang, near Poopo, *de Vogel* 2631 (A, BO, L, US); C Sulawesi, Sopa valley, c. 80 km SSE of Palu, *de Vogel* 5061 (BO, K, L), *de Vogel* 5087 (BO, K, L); Sulawesi Utara, Bolaang Mongondow, Dumoga Bone N.P., Toraut Dam, Toraut River, *de Vogel & Vermeulen* 6461 (BO, L); *de Vogel & Vermeulen* 6660 (BO, L, US); Membulu, *Elbert* 3787 (BO); Minahassa, Kolonedale, camp 2, Tompantette, *Eyma* 3986 (BO); Minahassa, N slope of G. Klabat, *Foruan* 240 (K); C Sulawesi, Ds Tonosu, Kec. Pamona Utara. Kab. Poso, *Hanzah* 6 (BO); Liasa, *Kjellberg* 2274 (BO); Minahassa, Runokelung, *Koorders* 16151 (BO); Minahassa, *Koorders* 16158 (BO); Minahassa, *Koorders* 16177 (BO); Minahassa, *Koorders* 16178B (K, P); Minahassa, *Lam* 2427 (BO); Kanakelang, Pasir Malago (?), Labo, *Lam* 3012 (BO); Between Palu and Parigi, 35 km from Palu, *Meijer* 9368 (BO, US); Between Palu and Parigi, 35 km from Palu, *Meijer* 9410 (US); Area of Mt Nokilalaki, above Toro, *Meijer* 9463 (BO); Tompokbalang, Maros, *Soenarko* 316 (BO, K); C Sulawesi, Sopa valley, c. 80 km SSE of Palu, *van Balgooy* 3051 (BO, K, L); P. Butang (Buton), Mata area, Wakunti F.R., Baubau, *Widjaja* 603 (BO). MALUKU: Halmahera, *Backer* 1875 (BO), Sula, Sula Sanana, *Bloembergen* 4501 (SING); Ambon, G. Harul, *Boerlage* 86 (BO); P. Tenimber, P. Jamdena, near resthouse between Kp. Ilgnei and Otimmer, *Burwald* 4126 (A, BO, K); Halmahera, G. Sahu, near Susupu, *de Vogel* 3321 (BO, K, L, MO); Halmahera, Weidamo, *Idjan & Mochtur* 195 (BO); Halmahera, Teluga rano, *Idjan & Mochtur* 265 (A, BO, K); W. Ceram, Kairatu, Gemba, *Kuswata & Soepadmo* 37 (BO, K); P. Buru, W. Buru, Bara, Wae Duna, Base Camp 7, *Mogea* 5367 (BO, K, L); 'Maluku', *Purucausingsiti & Saunsi* 30 (BO); Amboin, Paso, *Robinson* 116 (K, P, US), *Robinson* 117 (US); Halmahera, Wasile, Kg Loleba, *Taylor* 2164 (US); Ambon, *Teysmann* s.n. (BO); Buru, *Leksula*, *Toxopeus* 623 (BO). NEW GUINEA: PAPUA BARAT: Cenderawasih Prov., Wandammen Peninsula, Wondiwoi Mts, *BW* 13309 (L, LAE); Kepala Burung Prov., Sorong, *Djanhari* 470 (A, BRI, K, L, SING); Kepala Burung, Manokwari, Nuni, Sg. Asai, *J. Drausfield et al.* 7562 (BO, K, MAN); Kepala Burung Prov., on road from Manokwari past Pasir Puthi to N coast road, *Johns* 7676 (BO, K, MAN); Kepala Burung, Manokwari Prov., Arfak plains, approaching logging area c. 1 km E of Wariori River, *Johns* 8142 (BO, K, MAN); Biak Is., hill NE of Mokmer airport, *Nicolson* 1566 (B, K, L, LAE, P, US); Fanindi, 1 km W of Manokwari, *Nicolson* 1572 (B, K, L, LAE, P, US); Kepala Burung, Manokwari, Arfak plains, close to road from SP7 to Sg. Wariori, *Sands* 6270 (BO, K, MAN); Mimika Prov., Freeport Concession Area, Rimba Irian Golf Course, outskirts of Kuala Kencana, *Utteridge* 108 (BO, K, MAN); Mimika Prov., Freeport Concession Area, *Utteridge* 391 (BO, K, MAN). PAPUA NEW GUINEA: Central Prov., Kokoda, *Carr* 16162 (B, BM, K, L, SING); Central Prov., Veiya, *Carr* 11729 (BM, K, L, LAE, SING); E Sepik, Along small River S of Boys Town (reform school operated by S.V.D. missionaries), *Croat* 52781B (MO); Morobe, Lae B.G., *Croat* 52848 (MO); New Ireland, Lamet, NW Lavongai, 5 km S of Lai Bay, *Croft & Lelean* LAE 65463 (A, BRI, CANB, E, K, L, LAE, US); E Sepik, Aitape, near Sumo on Rhainbrum River, *Darbyshire & Hoogland* 8077 (BM, CANB, L, LAE); Bougainville, Buin, 1 mile N of Tonolei harbour, *Foreman* NGF 45669 (LAE, US); Manus, Derimat, *Foreman* NGF 52349 (LAE, US); Milne Bay Prov., near Kaibola, *Frodin* UPNG 977 (K, L, LAE, UPNG); Bougainville, Kieta, *Kajewski* 1607 (P); Bougainville, Buin, Kugi-maru, *Kajewski* 1813 (P); Milne Bay, Rabaraba, Ma-u River, *Katik* NGF 56290 (LAE, US); Mussau, Malakata, *Koie & Olsen* 1686 (C); Bougainville, Pavairi, *Lavarack & Ridsdale* NGF 31188 (BRI, K, L, LAE, US); Mile Bay, Normanby Island, Eaa'ala, Sewa Bay, *Lelean & Streimann* NGF 52542 (L, LAE, US); Admiralty Islands, *Moseley* s.n. (K); Central Prov., Brown River F.R., 20-25 miles NW of Port Moresby, *Nicolson* 1424 (US); Central Prov., Sogeri Plateau, between Subitana and Javereri, headwaters of Kemp Welsh River, *Nicolson* 1447 (B, K, L, US); New Britain, Kareeba road, 2 miles E of Kerevat, *Nicolson* 1497 (B, K, L, LAE, US); Bougainville, Arawa, McKillup's Arawa Plantation, 6 miles W of Kieta, *Nicolson* 1523 (K, US); New Britain Is., 3 miles NE of Kandrian, *Nicolson* 1548 (US); E Sepik Prov., Ambunti, Waskuk Hills, area around Langu and Garuka, ridge towards Waskuk Hills, *Regalado & Takeuchi* 1502 (K); W Sepik Prov., Amanab, Bewani Mts, near Killifas on Yenabu River, not far from Imonda petrol track, *Sands* 1169 (K); Manus, E Manus, Mundrau, depression S of Kari, c. 8.5 km inland from N coast, below Ndrias karst, *Sands et al.* 2687 (K); Manus,

W Manus, 1 km SW of Kabuli, on S coast, *Sands et al.* 2778 (K, US); Bougainville, vicinity of Aku, c. 10 miles W of Buin Station, *Schodde & Craven* 4042 (A, CANB, K, L, LAE); Manus, SW Manus, Kabuli, *Stone* 10387 *snb.* LAE 53687 (A, BRI, K, L, LAE, US); New Britain, Cape Hoskins, Mosa Forestry Plantation, *Streimann* NGF 44401 (K, L, LAE, US); W Sepik, Vanimo, Wutung, *Streimann* NGF 52784 (LAE, US); W Sepik Prov., Vanimo, Ossima, *Streimann & Kairo* NGF 39265 (CANB, K, L, LAE, US); Morobe Prov., Herzog Mountains, Gabensus logging track, *Takeuchi* 7386 (K); Bougainville, Siwai, *Waterhouse* 196C-B (K); Bougainville, Siwai, *Waterhouse* 432-B (K); 'Kaiser Wilhelmsland', *Weinland* 284 (K). SOLOMON ISLANDS: Small Malaita, N of Tarapaina, *Gafui et al.* BSIP 16967 (BSIP, K, L, LAE); Choiseul, Dalepima area, Mbirambira, *Gafui et al.* BSIP 18828 (BSIP, L, LAE, SING, US); Kolombangara, 2 miles NNW of Kuzi, *Hunt* 2400 (BSIP, K, US); Vella Lavella, S Vella Lavella, Oual River area, *Kotali et al.* BSIP 11187 (BSIP, K, L, LAE, SING); Kolombangara, Shoulder Hill area, *Mauriasi et al.* BSIP 8727 (BSIP, K, L, LAE, SING), *Mauriasi et al.* BSIP 11396 (BSIP, K, L, LAE); Northern Treasury Is., Kughala River area, *Mauriasi et al.* BSIP 14064 (BSIP, K, SING); Ranongga, Kolomali area, *Mauriasi et al.* BSIP 14313 (BSIP, K, L, LAE, SING, US); Ranongga, SE Ranongga, dam area, *Mauriasi et al.* BSIP 14391, (BSIP, K, L, LAE, SING); Ranongga, Palaina, *Mauriasi et al.* BSIP 15666 (BSIP, K, L, LAE, SING); Ranongga, SE Ranongga, *Mauriasi et al.* BSIP 15764 (BSIP, K, L, LAE, US); Guadalcanal, Tina/Toni River area, *Nakisi & Babala* BSIP 8244 (BSIP, K, SING); Kolombangara, Poitete F.R., along access trail to Mt Veve, *Regalado & Sirikolo* 730 (K, MO); Shortland Is., SW Koang Kopi River, *Runikera et al.* BSIP 13073 (BSIP, K, L, LAE, SING); Choiseul, 3 miles inland from Liulu on N coast, *Whitmore* BSIP 3910 (BSIP, K, LAE, SING).

13. *Pothos dolichophyllus* Merr.

Pothos dolichophyllus Merr., Philipp. J. Sci., Bot. 11 (1916) 4. — *Pothos rumphii* Schott var. *dolichophyllus* (Merr.) Nicolson, Amer. J. Bot. 54 (1967) 496. — Type: Philippines, Luzon, Sorsogon Prov., Jul-Aug 1915, *Ramos* BS 23708 (PNH, presumed destroyed, holo; iso P, US).

Pothos acuminatissimus Merr., Philipp. J. Sci., Bot. 11 (1916) 175 & Enum. Philippine Pl. 1 (1922) 172, *syn. nov.* — Type: Philippines, Samar, Catubig River at Tagabiran, 10 Feb 1916, *Ramos* BS 24125 (PNH, presumed destroyed, holo; iso US).

Robust and vigorous, moderately ramified homeophyllous root-climbing liane to at least 5 m, but frequently greatly exceeding this. *Shoot system* rather poorly differentiated into adherent and flowering branches; eocaul and seedling not observed. *Leaves* stiffly thinly-chartaceous, drying pale yellowish green; petiole 8–30 × 0.4–1 cm, slender to very stout, sheath prominent, extending to base of apical geniculum; blade 14–50 × 5.5–19 cm, ± pendulous, elliptic to oblong elliptic, rarely linear-elliptic, apex acuminate to obtuse, with a flexuous filiform mucro, base acute to rounded; primary lateral venation diverging at c. 60–80°, crossed by usually three intramarginal veins on each side of the midrib, these arising from near the base of the midrib and running more or less to the leaf tip. *Inflorescence* solitary or a few together at the end of leafy, pendulous shoots; peduncle 16–25 × 0.4–1 cm, about equalling the petiole of the subtending leaf, extending by up to double in fruiting specimens. *Spathes* 13–27 × 2.5–5 cm, somewhat exceeding the spadix, narrowly lanceolate, distally somewhat twisted, membranous, green. *Spadix* sessile, 10–19 × 0.7–1.5 cm, slender to stout cylindrical, yellow at anthesis. *Flowers* 2–2.5 mm diam. with (4)–6, free tepals and (4)–6 stamens. *Infructescence* considerably elongated, to c. 30 cm long, pendulous, with many berries; fruit to c. 2.5 × 1.5 cm, ovoid, scarlet when ripe; seeds not observed.

— Fig. 16.

Distribution — *Malesia*: endemic to and widespread in the Philippines.

Habitat — Primary to secondary dipterocarp forest in valleys, on slopes and ridges, 110–900 m altitude.

Notes — Evidently very closely related to *P. tener* (which is absent from Sunda) but readily separable by the consistently sessile spadix and geographical disjunction. Confusion with *P. ovatifolius* is possible, although the latter has a stipitate spadix.

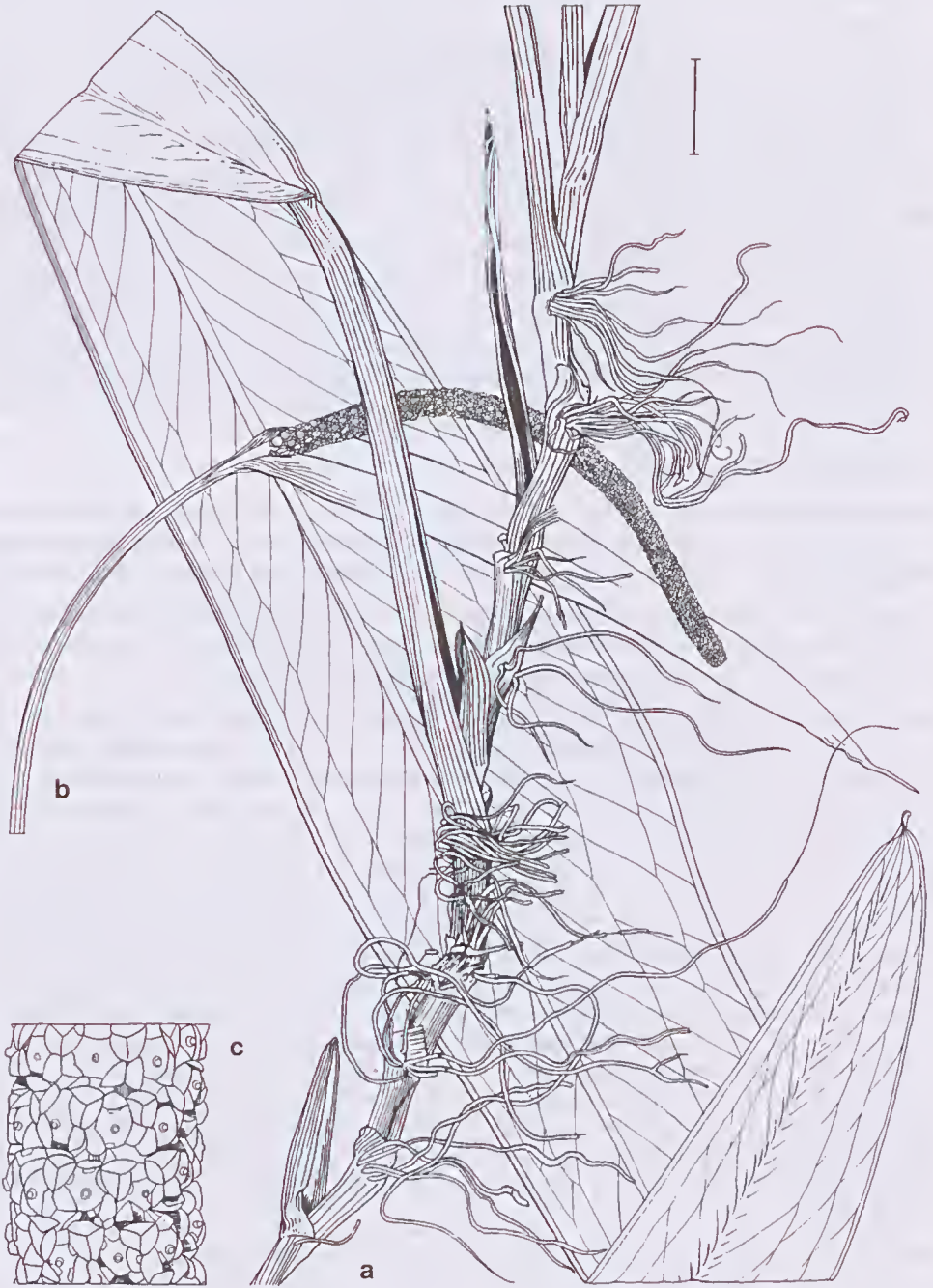


Fig. 16. *Pothos dolichophyllus*. a, adult adherent shoot; b, inflorescence; c, spadix detail: a, Ramos BS 23708; b & c, Nicolson 777. Scale bar: a, b, = 2 cm; c = 3.5 mm.

Pothos acuminatissimus is simply a form of *P. dolichophyllus* with narrower leaf blades than typical for the species.

Other specimens examined: PHILIPPINES: Luzon, Camarines Sur, Naga City, Mt Isarog, *Barbon et al. PPI 8141* (US); Luzon, Quezon N.P., *Croat 53005* (MO); Luzon, Tayabas, *Curran FB 9656* (US); Samar, Mt Purog, *Edaño PNH 15426* (PNH); Luzon, Sorsogon Prov., Mt Juban, *Edaño PNH 37152* (PNH); Luzon, Tayabas Prov., Lucban, *Elmer 9268a* (BM, E, K, MO, US); Luzon, Sorsogon Prov., Irosin (Mt Bulusan), *Elmer 15854* (A, C, K, MO, P, US); No further information, *Loher 7033* (K); Luzon, Laguna, Banahao, *Loher 7052* (K); Luzon, Albay Prov., Mayon volcano, *Mendoza PNH 18238* (PNH); Mindanao, Surigao, Sukailang, *Mendoza & Convozar PNH 10237* (A); Palawan, Taytay, *Merrill BS 9761* (P, US); Mindanao, Davao Prov., Compostela, Maparar Barrio, 70 km NE of Davao, *Nicolson 699* (PNH, US); Luzon, Sorsogon, Mt Bulusan, S side, near Lake Bulusan, *Nicolson 758* (US); Luzon, Sorsogon, Mt Bulusan, pathside around Lake Bulusan, *Nicolson 776* (US), *Nicolson 777* (US), *Nicolson 778* (US); Luzon, Sorsogon, Mt Bulusan, above Lake Bulusan, *Nicolson 782* (US); Samar, Loquilocan Barrio, 10 km W of Wright, *Nicolson 804* (PNH, US); Leyte, near lumber camp above Putok River, *Nicolson 821* (US); Mindanao, Camaguin de Mindanao, *Ramos BS 14707* (BM, K, US); Luzon, Sagnay, Camarines, *Ramos BS 22132* (P, US); Samar, Catubig River, *Ramos BS 24144* (US); Luzon, Sorsogon Prov., Lake Bulusan, *Sinclair & Edaño 9616* (E, K, PNH, SING, US); Mindanao, Butuan, *Weber 1044* (A, US); Leyte, *Wenzel 22* (BM, MO, US); Mindanao, Lanao Prov., vicinity of Olang, near Momungan, *Zwickey 835* (A).

14. *Pothos ovatifolius* Engl.

Pothos ovatifolius Engl. in Engl., *Pflanzenr.* 21 (IV.23B) (1905) 40; Elmer, *Leafl. Philippine Bot.*, 10(133) (1938) 3628; Merr., *Enum. Philippine Pl.*, 1 (1922) 173. — Type: Philippines, Luzon, Albay, Mar 1886, *Vidal 3969* (K, holo).

Pothos merrillii K. Krause, *Bot. Jahrb. Syst.* 45 (1911) 657, *syn. nov.* — Type: Philippines, Siquijor, Sep 1910, *Merrill BS 7211* (B, holo).

Pothos ovatifolius Engl. var. *simalurensis* Alderw., *Bull. Jard. Bot. Buitenzorg III*, 4 (1922) 337, *syn. nov.* — Type: Indonesia, Sumatera, Aceh, P. Simeulue (Simalur), Tapoe, Defajan, 12 Feb 1920, *Achmad 1683* (BO, holo; iso BO).

Very robust, vigorous, moderately ramified semi-heterophyllous root-climbing liane to 30 m. *Shoot system* weakly or not differentiated into non-flowering and flowering branches; cocaul foraging and climbing, often very long with occasional stretches of a few shingling leaves; seedling shingling. *Leaves* mid-green, semi-glossy above, stiffly chartaceous to coriaceous, drying pale grey-yellowish green; petiole (1)–5–16 × 0.5–1.3 cm, rather stout, sheath prominent, extending to just over the base of the apical geniculum, lower portion clasping stem; blade (3)–8.5–27 × (2.5)–7–27 cm, spreading, oblong ovate to very broadly ovate, oblique, sometimes profoundly so, apex acuminate to obtuse, ultimately with a stout tubular mucro, base broadly rounded to narrowly cordate; primary lateral venation diverging at c. 60–80°, crossed by usually three intramarginal veins on each side of the midrib, these arising from near the base of the midrib and running more or less to the leaf tip. *Inflorescence* solitary at the end of leafy, pendulous shoots; peduncle 9–15 cm, about equalling the petiole of the subtending leaf, most of it within the sheath at flowering. *Spathe* 14–23 × 3–5 cm, somewhat exceeding the spadix, narrowly lanceolate to narrowly elliptic, distally somewhat twisted, membranous, green. *Spadix* conspicuously stipitate; stipe c. 2–4 × 0.15–0.2 cm; fertile portion 9–20 × 0.7–1.4 cm, long-cylindrical, brownish yellow-green or purple. *Flowers* c. 2.5 mm diam.; with 6 free tepals and 6 stamens. *Infructescence* elongated, to c. 17 cm long, pendulous, with many berries; fruit 1.4–2.5 × 1–1.5 cm, ovoid, to scarlet when ripe; seeds c. 3.5 × 5 mm, ellipsoid, pale greenish brown. — Fig. 17.

Distribution — *Malesia*: Sumatera (P. Simeulue), Malay Peninsula (P. Tioman), Borneo (Sarawak, Sabah), Philippines (widespread).

Habitat — Primary to degraded secondary lowland to lower montane forest, 70–1400 m altitude.

Notes — Closely related to *P. teuer* but readily separable by the much more coriaceous ovate, cordate-based leaf blade. Confusion with *P. dolichophyllus* is possible, although the latter has a sessile spadix and oblong leaf blade. *Pothos dolichophyllus* and *P. ovatifolius* occur sympatrically at Lake Bulusan, and probably elsewhere, in the Philippines. This species is not common in north Borneo, occurring as small scattered populations in wet River valleys in Sabah.

Pothos merrillii and *P. ovatifolius* var. *sinualurensis* are uncontroversially synonymous with *P. ovatifolius*.

Other specimens examined: SUMATERA: Benkulu, P. Enggano, *Lütjeharms* 4457 (A, K, P), *Lütjeharms* 4759 (BO, K, P), *Lütjeharms* 4760 (A, BO, K, P). PENINSULAR MALAYSIA: Pahang, P. Tioman, Jawa Bay, *Burkill s.n.* (SING); Pahang, P. Tioman, Bk. Bt. Berendam *Nur SING* 21753 (K, SING). BORNEO: SARAWAK: Ben Kaian, *Brooks s.n.* (SING). SABAH: Tambunan Distr., road to Kg Tondulu, Kg Tondulu valley, *Boyce* 1422 (K, SAN, SP); Tambunan Distr., Kg Kangeran road, Bt. Lapan, 1.5 hours by car from Kg Kangeran, *Boyce* 1423 (K, SAN, SP). PHILIPPINES: Luzon, Camarines Sur, Covangcognon, Pili, Mt Isarog, *Convocar PNH* 2892 (A); Luzon, Quezon N.P., *Croat* 52982 (MO); Luzon, Sorsogon, *Curran FB* 12247 (US); Luzon, Camarines Norte, Mt Cadig, *Edaño PNH* 40154 (BM, K); Luzon, Sorsogon, Mt Juban, *Edaño PNH* 37200 (BM, K, PNH); Luzon, Tayabas, Lucban, *Elmer* 9243 (E, K, MO, US); Negros, Negros Oriental, Dumaguete (Cuernos Mts), *Elmer* 9618 (BM, BO, E, K, MO, US); Mindanao, Agusan, Cabadbaran (Mt Urdaneta), *Elmer* 14014 (A, E, BO, MO, US); Luzon, Sorsogon, Irosin (Mt Bulusan), *Elmer* 15204 (A, BM, BO, C, K, MO, P, US); Mindanao, Davao, Hijo, Odell Plantation, *Gachalian PNH* 33692 (L, PNH); Mindanao, So. Cotabato, Koronadal, Taplan/Lamsol, Miasong, Tupi, *Caerlani et al. PPI* 5443 (US); Mindanao, Tungao, San Mateo, Butuan Ojot River, km 22, *Mendoza PNH* 42452 (PNH, US); Luzon, Sorsogon, Mt Bulusan, SE side, along path around Lake Bulusan, *Nicolson* 762 (B, K, US); Samar, Loquilocan Barrio, *Nicolson* 806 (PNH, US); Leyte, near lumber camp above Putok Barrio, c. 22 km SW of Tacloban, *Nicolson* 819 (K, US); Palawan, Balabac, Dalawan Bay, *Olson* 540 (C); Palawan, Penigisan, *Olson* 559 (C); Luzon, Tayabas, Mt Pular, *Ramos BS* 19367 (US); Samar, Catubig River, *Ramos BS* 24543 (US); Luzon, Tayabas, Mt Binuang, *Ramos & Edaño BS* 28549 (BO, P, US); Leyte, Cabalian, *Ramos BS* 41549 (BO, P, SING, US); Bohol, *Ramos BS* 42820 (BO, K, P); Catanduanes, Sorsogon Prov., Mt Juban, *Ramos & Edaño PNH* 75424 (SING); Palawan, Taytay, Lake Manguao (Danay), valley stream leading into NNW bay of lake, *Ridsdale SMHI* 362 (BO); Basilan, Lamitan, Basilan City, Bureau of Animal Husbandry Breeding Station, E side of Banis Malsony, *Santos* 4154 (US); Luzon, Quezon N.P., 25 km E of Lucena, *Socjarto et al.* 7823 (A, MO); Luzon, Sorsogon, Mt Bulusan, along road to Bulusan Lake, vicinity of crossing, *Sulit PNH* 2623 (PNH); Mindanao, Lanao, vicinity of Dansalan-Ramain road, *Zwickey* 171 (A); Mindanao, Lanao, vicinity of Olangu, near Momungan, *Zwickey* 714 (A).

15. *Pothos leptostachyus* Schott

Pothos leptostachyus Schott, Prodr. Syst. Aroid. (1860) 571; Engl. in A. & C. DC, Monogr. Phan. 2 (1879) 91 & in Engl., Pflanzenr. 21 (IV.23B) (1905) 41; Ridl., J. Straits Branch Roy. Asiat. Soc. 44 (1905) 187. — Type: Indonesia, S Kalimantan, Bangarmassin, *Motley* 1197 (K, holo).

Pothos lorispachus Ridl., J. Straits Branch Roy. Asiat. Soc. 86 (1922) 310 ('*lorispatha*'); Ridl., Fl. Malay Penins. 5 (1925) 130; Boyce, Blumea 45 (2000) 195–198, fig.13a,13b, *syn. nov.* — Type: Malaysia, Selangor, Batu Caves, *Ridley s.n.* (SING, holo; iso K).

Slender to rather robust, (heterophyllous?), root-climbing liane to 8 m. *Stem?*; eocaul & seedling not observed. *Leaves* mid-green adaxially, slightly paler abaxially, stiffly but thinly chartaceous, drying dull greenish; petiole 3–7 cm long, slender, sheath somewhat prominent, extending to just below geniculum, basally clasping, apically briefly auriculate to slightly ligulate; blade 10–34 × 2.5–10 cm, oblong-elliptic, often falcate, unequal, occasionally quite strongly so, base rounded, apex acute to acuminate, very briefly apiculate; intramarginal veins 2 per side, the lowermost

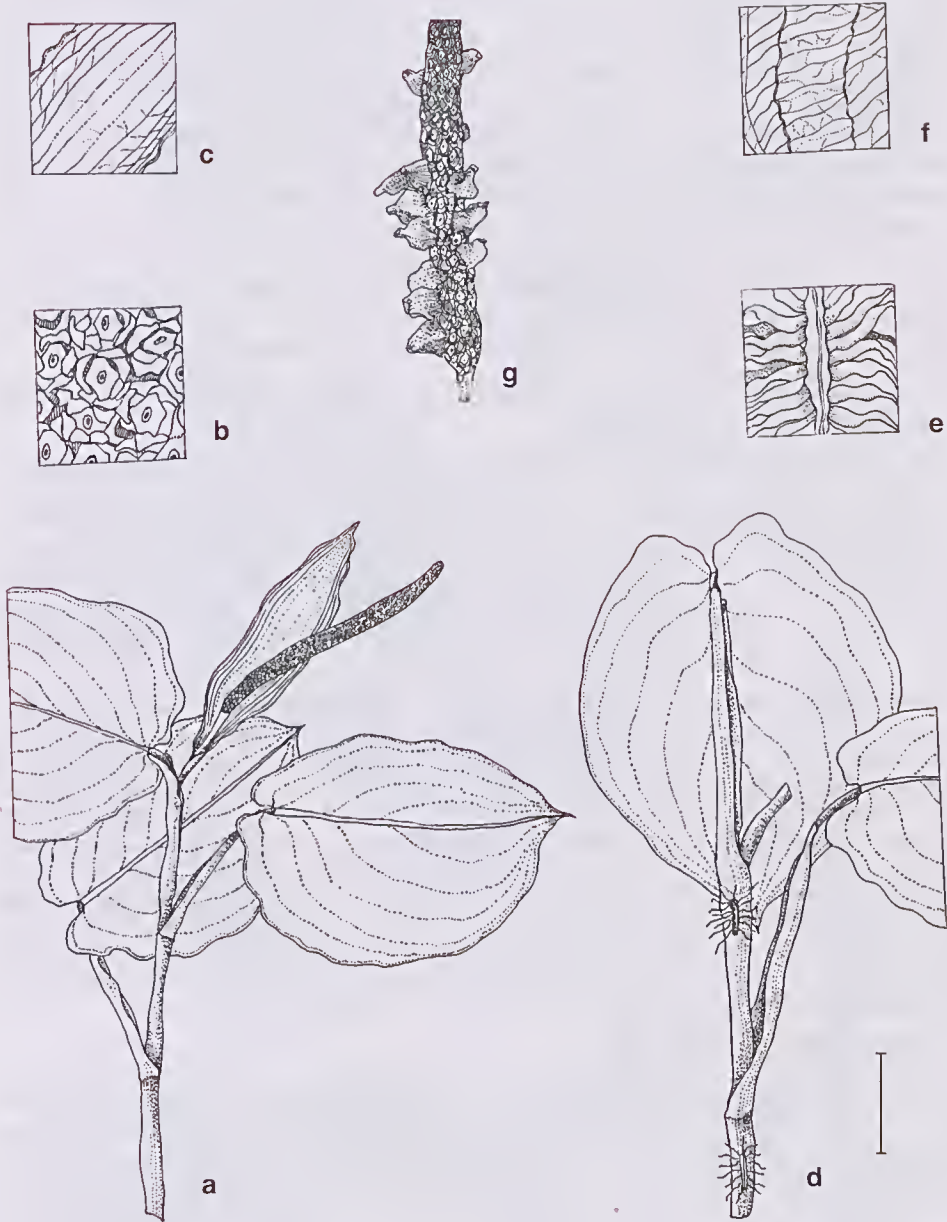


Fig. 17. *Pothos ovatifolius*. **a**, flowering shoot; **b**, spadix detail; **c**, spathe venation detail; **d**, adult adherent sterile shoot; **e**, detail of mid-vein; **f**, venation detail; **g**, mature infructescence detail: **a-c**, Nicolson 762; **d-f**, Elmer 9618; **g**, Edaño PNH 37200. Scale bar: **c**, **f**, **g**, = 2 cm; **a**, **d** = 4.5 cm; **e** = 7 mm; **b** = 5 mm.

arising from the base, the next arising from the lowest part of the midrib, outer intramarginal vein remaining very close and parallel to margin, inner vein c. 1 cm distant, both reaching the leaf tip; flowering shoot abbreviated, usually leafless but with 1–several well-developed cataphylls, very occasionally with one or more fully developed but reduced leaves, arising from below the leaf axils of fertile shoots. *Inflorescence* solitary from tips of leafy shoots, rarely terminal on (foliage-)leafless reiterative shoots arising in leaf axils or from leafless stems and then often with inflorescences at different stages of maturity; peduncle 2.7–5 × 0.2–0.3 cm, moderately stout, erect or curving and ultimately ascending and the inflorescence held erect, dull green. *Spathe* 2.5–10 × 0.5–1.5 cm, lorate, spreading, base auriculate, auricle margins inrolled, barely decurrent on the peduncle, apex obtuse, acuminate, mid-green. *Spadix* stipitate; stipe 0.8–1.5 × c. 0.2 cm, slender, terete, lime green; fertile portion 5–6.5 × 0.3–0.4 cm, cylindrical to tapering slender–cylindrical, straight to slightly curved, base unequal, slightly cochleate, creamy-yellow. *Flowers* c. 1.5 mm diam.; tepals 6, free; stamens 6. *Infructescence* with numerous berries; fruit 10–15 × 5–8 mm, obclavate to ellipsoid, ripening deep scarlet. Seeds c. 4–6 × 2–4 mm, ellipsoid. — Fig. 18, 19.

Distribution — Thailand (Yala). In *Malesia*: Sumatera (Aceh), Peninsular Malaysia (Pahang), Borneo (widespread).

Habitat — Damp to rather dry evergreen hill forest on limestone, 50–300 m altitude.

Note — Although sterile specimens are very difficult to identify, fertile specimens are instantly recognizable by the form and size of the inflorescences. *Pothos leptostachyus* is superficially similar to *P. laucifolius* but readily distinguishable by the lorate spathe, stipitate spadix and slender (not thickened) peduncle. It is also confusable with *P. wallichii* (also with long, slender peduncle and lorate spathe), but is distinguished by the erect, stouter inflorescences.

Other specimens examined: SUMATERA: Aceh, Lau Simerah and Lau Penangganjan, near Kutatjane, *Alston* 14510 (K, L); Aceh, G. Leuser N.R., Ketambe, valley of Lau Alas, near tributary of Lau Ketambe, c. 35 km NW of Kutatjane, *de Wilde & de Wilde-Druyffes* 12315 (K, L). PENINSULAR MALAYSIA: Pahang, Kuantan, Pancing, Bk. Cheras, *Zainuddin* 1295 (UKMB). BORNEO: SARAWAK: 1st Div., Matang, *Ridley s.n.* (K); 1st Div., Matang Reservoir. *Ridley s.n.* (K). SABAH: Sandakan, Gomantong Caves, *Kokawa & Hotta* 572 (K, KYO); Keningau, Ulu Sg. Karamatoi, *Krispinus* SAN 121908 (SAN); Tawau Hills Park, Bombalai Hill, *Madani & Sigin* SAN 111552 (K, SAN); Tawau, Tawau Hills Park, Bombalai Hill, *Madani & Sigin* SAN 111552 (K, SAN); Tenom, Hutan Simpan Mendalom, *Manitor* SAN 136116 (SAN); Sandakan, Gomantong F.R., Dulong Lambu limestone massif, Gomantong limestone hill, *S.P. Lim et al.* 576 (NSW, SAN); Bk. Garam, Sg. PSN, Block 13, *S.P. Soon* SAN 131673 (K, SAN). KALIMANTAN: CE Kalimantan, W Koetai no.9 near G. Antjaloeng, *Eudert* 2058 (A, BO, K); CE Kalimantan, W Koetai, *Eudert* 2362 (BO).

16. *Pothos barberianus* Schott

Pothos barberianus Schott, Aroidae (1856–1857) 24, t.53 & Prodr. Syst. Aroid. (1860) 573; Engl. in A. & C. DC, Monogr. Phan. 2 (1879) 90; Hook.f., Fl. Brit. Ind. 6 (1893) 553; Engl. in Engl., Pflanzenz. 21 (IV.23B) (1905) 40; Ridl., J. Straits Branch Roy. Asiat. Soc. 44 (1905) 187 & Mat. Fl. Malay Penins. 3 (1907) 49–50; Merr., J. Straits Branch Roy. Asiat. Soc., special ed., (1921) (1921) 86; Ridl., Fl. Malay Penins. 5 (1925) 129. — Type: Malaysia, Sabah, P. Labuan, *Barber* 231 (K, holo).

Slender, heterophyllous, root-climbing liane to 7 m. *Shoot system* only weakly differentiated into flowering and non-flowering branches; cocaul thread-like, with scattered minute bracts, then abruptly becoming shingling; seedling shingle-leaved, then abruptly producing adult leaves. *Leaves* mid- to deep green adaxially, slightly paler abaxially, stiffly chartaceous, drying greyish green with the midrib pale yellow and prominently raised abaxially; petiole 3–8 × 0.3–0.35 cm, slender, sheath extending to base of geniculum, clasping basally, prominent; blade 6–19 × 1.5–7 cm, ovate to

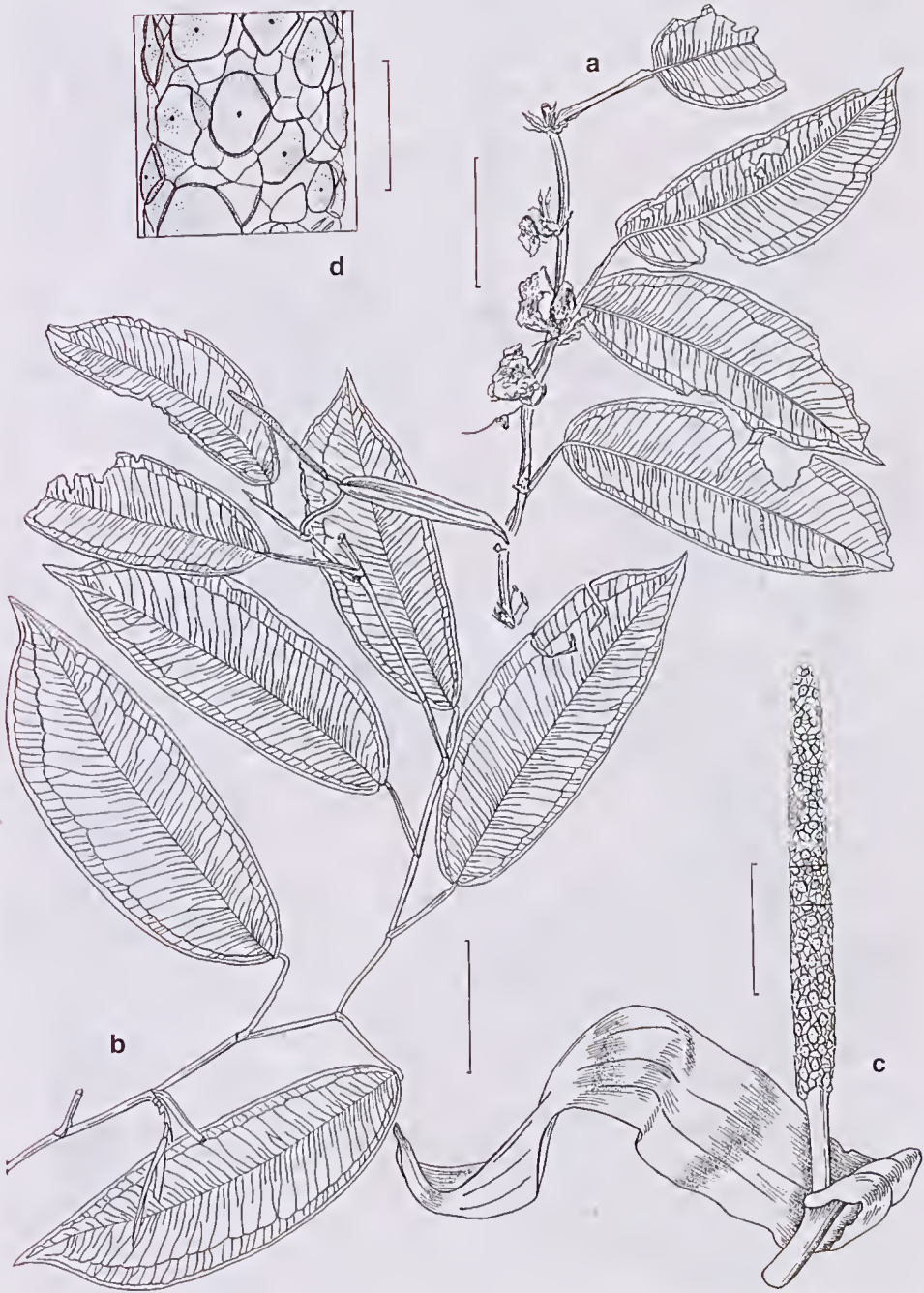


Fig. 18. *Pothos leptostachyus*. a, mature sterile shoot; b, fertile shoot; c, inflorescence; d, spadix detail.: a-d, Boyce 1218. Scale bars: a = 4 cm; b = 8 cm; c = 1.5 cm; d = 2.5 mm.

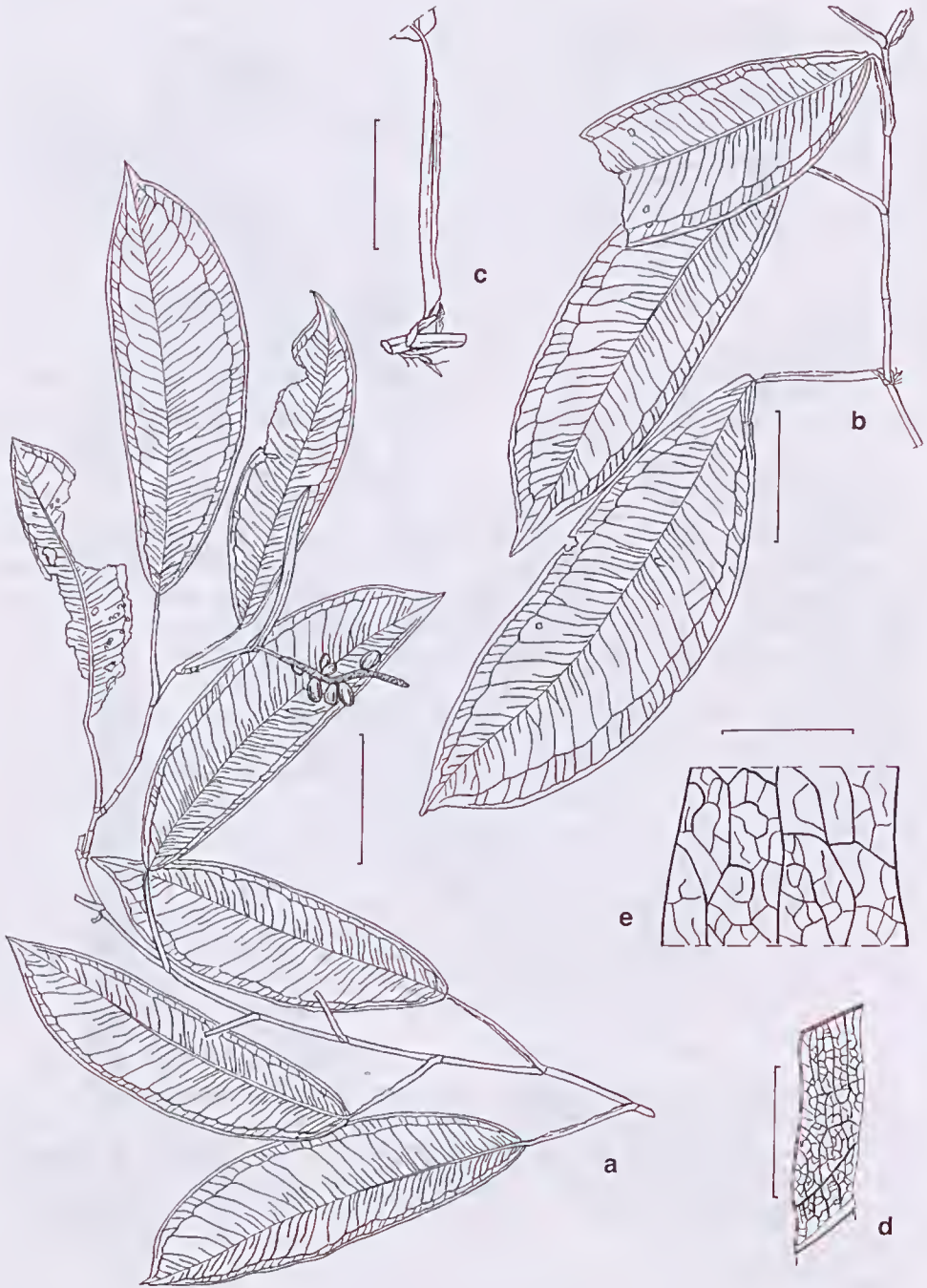


Fig. 19. *Pothos leptostachyus*. **a**, fertile shoot; **b**, mature sterile shoot; **c**, petiole detail; **d**, venation detail with midrib and intramarginal veins; **e**, venation detail: **a–e**, *Boyce 1218*. Scale bar: **a** = 8 cm; **b** = 8 cm; **c** = 3 cm; **d** = 3 cm; **e** = 5 mm.

elliptic or lanceolate, base acute to obtuse, apex attenuate-mucronate, acute or attenuate, minutely apiculate, often falcate; primary lateral veins arising at almost 90°, intramarginal veins 2 per side, the outer intramarginal vein remaining very close and parallel to margin. *Inflorescence* solitary, usually subtended by cataphylls on condensed short shoots arising from below the axils of distal leaves, occasionally from such shoots arising (persisting?) on leafless older stems, rarely terminal on leafy shoots, held inverted beneath the shoot by reflexing of the peduncle; peduncle 2–4 × 0.2–0.3 cm, very stout, reflexed 90–180° at the base, green to dark purple-green. *Spathe* 2.5–4 × 0.25–0.3 cm, lorate to lorate-lanceolate, strongly reflexed and appressed to peduncle, base minutely cochleate on the peduncle, apex acute, apiculate, green to dull purple-green, stiffly leathery. *Spadix* sessile, 2–7 × 0.3–0.4 cm, cylindrical to tapering-cylindrical, deep purple-brown. *Flowers* c. 1.3 mm diam., with 6 free tepals and 6 stamens. *Infructescence* with numerous berries; fruits 7–15 × 4–8 mm, ellipsoid, ripening red; seeds not observed. — Fig. 20, 21.

Distribution — *Malesia*: Sumatera, Peninsular Malaysia and Borneo. Common.

Habitat — In a wide range of habitats from primary and disturbed lowland forest on clays to ridgetop kerangas, 10–1800 m altitude.

Notes — *Pothos barberianus* is a ubiquitous element of the forests of Peninsular Malaysia and Borneo. In its typical guise (inflorescence pendent by the sharply reflexed peduncle, spathe strongly reflexed and spadix only just exceeding the greatly enlarged peduncle) it is unmistakable. However, some collections from Sabah are notable for their robustness and for the spadix greatly exceeding the peduncle in length; they approach *P. longivaginatius*.

Other specimens examined: SUMATERA: Riau Prov., Siak, Kelaulan River, *Ridley* 9014 (K, SING). PENINSULAR MALAYSIA: Selangor Bk. Lagong F.R., *KEP* 78970 (K, KEP); Perak, Maxwell's Hill, *Curtis s.u.* (SING); Perak, Larut, *Kunstler* ('Dr King's Collector') 3175 (K, P, US); Perak, Maxwell's Hill, *Ridley s.u.* (SING); Perak, Larut, *Ridley* 11285 (SING); Perak, Tupai, *Wray* 2338 (SING); Perak, Briaiah Larial, *Wray* 4212 (BM, SING); Perak, Maxwell's Hill, *Wray* 4235 (BM, SING). BORNEO: SARAWAK: 7th Div., Belaga, Ulu Sebako, *Ashton* 518212 (SAR, K); 1st Div., Semengoh F.R., *Brunig* 4805 (SAR); 4th Div., Lambir hills, *Burt & Woods* 2475 (E, SAR); 7th Div., Balingain, Rumah Tememgong, Begrih, Bawan, *Chai* S 19456 (K, SAR); 5th Div., Limbang, Tg. Long Amok, Sg. Ensungei, Ulu Medamit, *George et al.* 542867 (K, KEP, L, SAR, SAN, US); 1st Div., Kuching, *Haviland* 625 (K); 1st Div., Kuching, *Haviland* 938 (SING); 1st Div., Kuching, *Hewitt* A1 (SING); 1st Div., Tebedu, Bk. Simurus, *Molitor et al.* S 49292 (K, SAR, US); 4th Div., Bintulu, foot of Lambir Hills N.P., 20th miles Miri – Bintulu, *Paie & Yeo* S 38478 (K, KEP, L, SAN, SAR, US); 1st Div., Matang ridge, *Stevens et al.* 263 (A, SAR); 1st Div., G. Buri, *P.C. Yii* S43927 (K, L, SAR, US). BRUNEI DARUSSALAM: Belait, Ulu Ingei, Bk. Bt. Patam, *Boyce* 304 (BRUN, K); *Boyce* 316 (BRUN, K); Temburong, Amo, Bk. Belalong, *J. Dransfield et al.* 7176 (BRUN, K); Temburong, Amo, Bk. Belalong, L.P.382, valley E of campsite, *J. Dransfield et al.* 7405 (BRUN, K). SABAH: Kudat, *Boden-Kloss SFN* 19293 (SING, UCL); Tenom, Ulu Senagong, above Sg. Senagong, *Boyce* 1435 (K, SAN, SP); Tenom, Keningau road, Kg. Matailangm 4.5 km before Tenom, *Boyce* 1437 (K, SAN, SP); Tambunan, G. Trusmadi, *Fidilis* SAN 125457 (E, K, SAN); Sandakan, Bidu, 2 miles above Kiabau, *Meijer* SAN 43823 (SAN); Sandakan, Kebun Cina, *Meijer* SAN 124380 (K, L, SAN, SAR); Lamag, Kinabatangan, Karamuak, Sg. Kerang, *Muroh* SAN 70601 (SAN); Belarun, Telupid, Bk. Tangkunan, T.V. Station road, *Rahim et al.* SAN 93283 (K, L, SAN, SAR); Kota Belud, Mt Templer F.R., S of Sg. Talupid, *Shea & Minjulu* SAN 76257 (K, L, SAN). KALIMANTAN: C Kalimantan, Sampit River, Permantang, S of Kuala Kwajan, *Ashton* 13384 (BM); W Kalimantan, Serawai, 8 km NE of Desa Jelundung, Bt. Lintang, 1 km SE of camp, environs of S. Serawai, *Church et al.* 1685 (A, BO, K); C Kalimantan, Upper Katingan (Mendawi) River area, c. 50–100 km WNW of Tumbang Samba, *Mogea* 4442 (BO).

17. *Pothos longivaginatius* Alderw.

Pothos longivaginatius Alderw., Bull. Jard. Bot. Buitenzorg, III, 1 (1920) 380. — Type: Indonesia, Kalimantan, Sg. Ikang, 1896, *Jaheri* sub *Nieuwenhuis* 1159 (BO, holo).



Fig. 20. *Pothos barberianus*. a, fertile shoot; b, spadix detail; c, adult adherent shoot; d, fertile shoot with infructescence: a-c, Paic & Yeo S 38478; d, P.C. Yii S43927. Scale bar: a, c, d, = 2 cm; b = 2.7 mm.



Fig. 21. *Pothos barberianus*. a, fertile shoot; b, spadix detail; c, fertile shoot with young infructescence; d, fertile shoot with mature infructescence: a-c, Barber 231; d, Kunstler ('Dr King's Collector') 3175. Scale bar: a, c, d, = 2 cm; b = 2.2 mm.

Pothos kinabaluensis Furtado, Gard. Bull. Straits Settlements. 8 (1935) 149, *syn. nov.* — Type: Malaysia, Sabah, Tenompok, 26 Mar 1932, Furtado sub. Clemens & Clemens 29155 (SING, holo; iso A, BM, BO, K).

Robust, heterophyllous, root-climbing liane to 7 m. *Shoot system* only weakly differentiated into flowering and non-flowering branches; eocaul not seen; seedling shingle-leaved, abruptly producing adult leaves. *Leaves* deep green adaxially, paler abaxially, stiffly chartaceous, drying greyish to brownish green; petiole 6–18.5 × 0.3–0.5 cm, stout, sheath prominent, extending to base of geniculum, margins later scarious, clasping basally; blade 11–28 × 4–10 cm, ovate to elliptic or lanceolate, base acute to obtuse, apex attenuate-mucronate, acute or attenuate, minutely apiculate, often falcate; primary lateral veins arising at 70–80°, intramarginal veins 2 per side, the outer intramarginal vein remaining very close and parallel to margin. *Inflorescence* solitary, occasionally paired, usually subtended by cataphylls on condensed short shoots arising from below the axils of distal leaves, occasionally from such shoots arising (persisting?) on leafless older stems, rarely terminal on leafy shoots, held inverted beneath the shoot by reflexing of the peduncle; peduncle (3.5–)12–16 × 0.3–0.35 cm, very stout, reflexed 90–180° at the base, green to dark purple-green. *Spathe* (3–)6–9 × (0.3–)0.4–1.5 cm, lorate, strongly reflexed and appressed to peduncle, base minutely cochleate on the peduncle, apex acute, apiculate, green to dull purple-green, stiffly leathery. *Spadix* sessile, (2.5–)6–7 × 0.3–0.5 cm, cylindrical to tapering-cylindrical, deep purple-brown. *Flowers* c. 1.3 mm diam., with 6 free tepals and 6 stamens. *Infructescence* with numerous berries; fruits 10–15 × 4–7 mm, conical-ellipsoid, ripening red; *seeds* not observed. — **Fig. 22.**

Distribution — *Malesia*: endemic to Borneo.

Habitat — Mixed dipterocarp forest on slopes, ridges and streambanks on clay, sandstone and shale, 23–1525 m altitude.

Notes — Very close to *P. barberianus*, differing primarily in the overall greater dimensions and the typically much longer peduncle.

The type of *P. longivaginatns* is an excellent match for that of *P. kinabaluensis* and treated here as synonymous. Almost all specimens hitherto annotated in herbaria as *P. liosei* are either *P. longivaginatns* or *P. brevistylus* (q.v.).

Other specimens examined: BORNEO: SARAWAK: 'Native collector' 333 (BO, K, P, US). BRUNEI DARUSSALAM: Temburong, Sg. Temburong at Kuala Belalong, ridge W of River, Boyce 440 (AAU, BRUN, K); Temburong, Selapon, hill E of village, J. Dransfield 6934 (BRUN, K); Temburong, Selapon, Bt. Apoi, Bk. Tempedak, E of village, J. Dransfield et al. 7465 (BRUN, K); Temburong, Batu Apoi F.R., ridge W of Kuala Belalong Field Studies Center; Poulsen 147 (AAU, BRUN, K). SABAH: Ranau, Crocker range, Bk. Lugas, Kg. Himbaan, 8.5 km SE of Tenompok, Beaman 8463 (K); Tenompok, Clemens & Clemens 28514 (BM, K, SING); Penibukan, Gurulau spur, Clemens & Clemens 50710 (BM, SING); Tawau, Elmer 21822 (A, BM, BO, C, K, MO, P, SING, UCL).

18. *Pothos lancifolius* Hook.f.

Pothos lancifolius Hook.f., Fl. Brit. Ind. 6 (1893) 554; Engl. in Engl., Pflanzenr. 21 (IV.23B) (1905) 40; Ridl., Mat. Fl. Malay Penins. 3 (1907) 51 & Fl. Malay Penins. 5 (1925) 130–131; Boyce, Blumea 45 (2000) 193–195, fig. 12. — Type: Malaysia, Perak (probably Bk. Larut), Scortechini 576b (K, holo; iso BM, CAL, E, SING).

Pothos penicilliger Gagnep., Notul. Syst. 9 (1941) 135. — Type: Vietnam, Col des Nuages, near Tourane (Danang), Poilane 8089 (P, holo; iso GH, SAI).

Slender to somewhat robust, heterophyllous, root-climbing liane to 8 m. *Shoot system* well differentiated into adherent non-flowering and flowering free lateral branches; eocaul not observed; seedling shingle-leaved, often producing long, adherent strongly

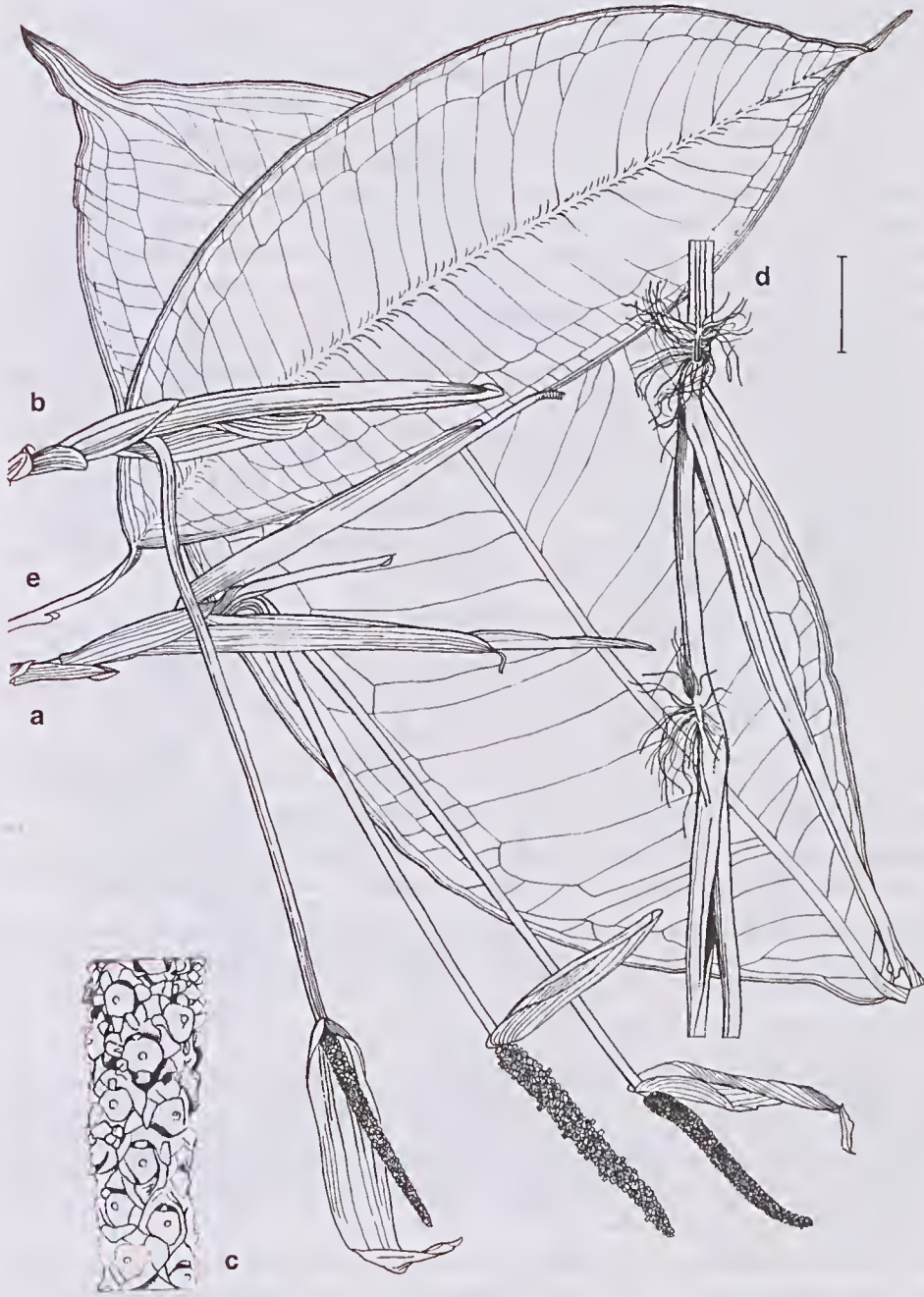


Fig. 22. *Pothos longivaginitus*. **a, b** fertile shoots; **c**, spadix detail; **d**, adult adherent shoot; **e**, leaf: **a–c**, Clemens & Clemens 29155; **d**, Brooke 10699; **e**, 'Native collector' 333. Scale bar: **a, b, d, e**, = 2 cm; **c** = 2.7 mm.

flattened feeding roots with a prominently warty-spiny epidermis. *Leaves* mid-green adaxially, slightly paler abaxially, stiffly chartaceous, drying dull greenish brown, midrib paler, prominently raised; petiole 4–14 × 0.15–0.2 cm, slender, sheath rather prominent, extending to just below geniculum, basally clasping, apically briefly ligulate; blade 10–25 × 2.5–10 cm, ovate to elliptic or narrowly lanceolate, base rounded, apex acute to long-attenuate, minutely apiculate; primary lateral veins arising at c. 60°, intramarginal veins 2 per side, the lowermost arising from the base, the next arising from the lower part of the midrib, outer intramarginal vein remaining very close and parallel to margin, inner vein c. 5 mm distant, both reaching the leaf tip. *Inflorescence* solitary, occasionally paired on a foliage-leafless shoot arising below a foliage leaf, less often terminal on a leafy shoot; peduncle 1.5–5 × 0.15–0.3 cm, stout, sharply bent, dull greenish yellow. *Spathe* 2.5–10 × 1–4 cm, lanceolate, slightly cucullate, base barely decurrent on the peduncle, apex acuminate, green to purplish-green, slightly softly-leathery. *Spadix* sessile, 1.5–5 × 0.3–0.9 cm, cylindrical, dark yellow to yellow-green. *Flowers* c. 1.5 mm diam., with 6 free tepals and 6 stamens. *Infructescence* with numerous berries, mostly born towards the bottom of the spadix; fruit 10–15 × 10–11 mm, ellipsoid to bottle-shaped, ripening deep scarlet, with prominent basal leathery and chartaceous tepal remains and a large stigmatic remnant; seeds c. 4–6 × 2–3 mm diam., ellipsoid. — **Fig. 23.**

Distribution — Vietnam. In *Malesia*: Peninsular Malaysia.

Habitat — Degraded dry to damp seasonal evergreen upper hill to lower montane forest on clay soils over granite, 900–1300 m altitude.

Notes — With the enlarged and sharply bent peduncle, *P. laucifolius* most resembles *P. barberianus*, from which it may be distinguished by the chartaceous spathe enclosing the spadix and persisting, though degrading, through to fruiting (vs. spathe coriaceous, reflexing, falling during fruit maturation in *P. barberianus*).

In the peduncle characters *P. laucifolius* is also morphologically similar to *P. kingii* although it may be distinguished from *P. kingii* by the lanceolate, not cucullate, spathe and the bottle-shaped fruits with large, broad, stigmatic remains.

Confusion is also possible with *P. leptostachyus*, from which *P. laucifolius* may be separated by the deflexed inflorescence, lanceolate (versus lorate) spathe and sessile spadix.

Other specimens examined: PENINSULAR MALAYSIA: Pahang, Fraser's Hill, Henderson FMS 11462 (UCL); Fraser's Hill, Bishop's Path, Kiew 3353 (UPM); Fraser's Hill, Sungei Yeh, Nur SFN 11145 (BO, K, SING); Cameron Highland, Nur SFN 32918 (A, K, KEP, MO, SING, UCL, US).

19. *Pothos philippinensis* Engl.

Pothos philippinensis Engl. in Engl., Pflanzenr., 21(IV.23B) (1905) 315; Merr., Enum. Philippine Pl., 1 (1922) 173. — Type: Philippines, Luzon, Bataan, Lamao River, Mar 1904, Barnes FB 369 (B, lecto **selected here**; isolecto US). Engler cited two conspecific syntypes. The second is Philippines, Luzon, Bataan, Lamao River, Mt Mariveles, May 1904, Whitford 341 (K, US). The specimen chosen as lectotype is a fertile one annotated with this name by Engler.

[*Pothos peninsularis* Elmer, Leaflet Philippine Bot. 10 (1938) 3628 [non Alderw. (1920)], nom. inval. descr. angl. — Based on: Philippines, Luzon, Sorsogon Prov., Irosin (Mt Bulusan), Aug 1916, Elmer 17050 (sheets seen at A, MO)].

Somewhat robust, (heterophyllous?), root-climbing liane to 12 m. *Shoot system* well differentiated into adherent non-flowering and flowering free lateral branches; eocaul and seedling not observed. *Leaves* stiffly chartaceous, drying dull greenish brown, midrib slightly paler; petiole 3–10.5 cm long, slender, sheath rather prominent, extending to just below geniculum, basally clasping, apically briefly ligulate; blade

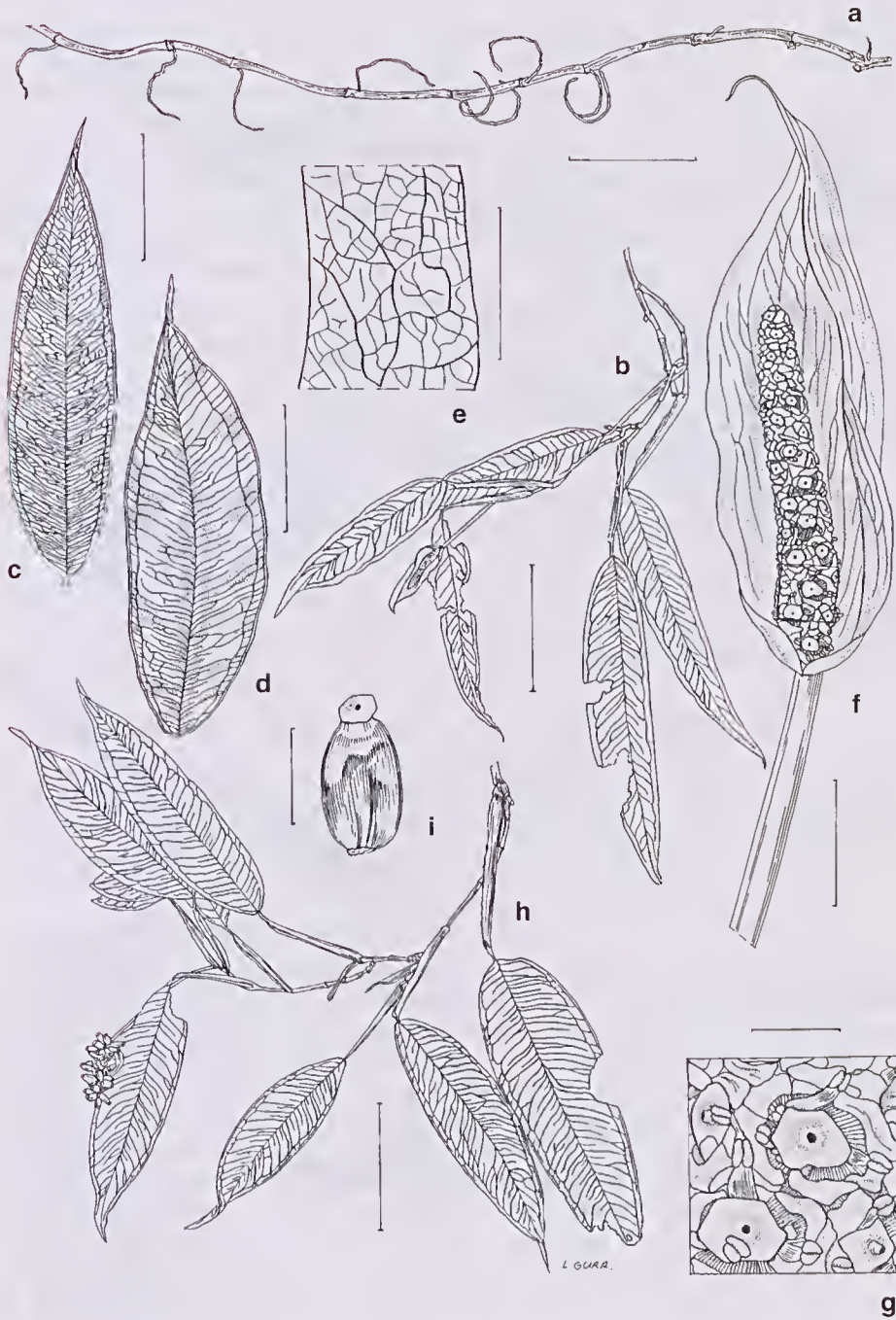


Fig. 23. *Pothos lancifolius*. a, older leafless sterile mature shoot; b, fertile shoot; c, leaf: minus petiole; d, leaf: minus petiole; e, venation detail; f, inflorescence; g, spadix detail; h, fertile shoot: bearing infructescence; i, mature berry: a & c, *Poilaue* 8089; b, f & g, *Vu Xuan Phuong* 1190; d & e, h & i, *Soviet-Vietnam Expedition* 4120. Scale bar: a, = 40 mm; b, = 40 mm; c, = 40 mm; d, = 60 mm; e, = 3 mm; f, = 5 mm; g, = 1 mm; h, = 60 mm; i, = 5 mm.



Fig. 24. *Pothos philippinensis*. a, b, fertile shoots in flower; c, spadix detail; d, fertile shoot with mature infructescence: a, Williams 486; b–c, Foxworthy BS 1640; d, Leonardo Co 3548. Scale bar: a, b, d = 2 cm; c = 2.2 mm.

6–26 × 2–9 cm, ovate to oblong elliptic or narrowly lanceolate, base rounded, rarely minutely truncate or cordate, apex acute to long-attenuate, falcate, apiculate; primary lateral veins arising at c. 45°, intramarginal veins 2 per side, the lowermost arising from the base, outer intramarginal vein remaining very close and parallel to margin. *Inflorescence* solitary, terminal on a leafy shoot; peduncle (4.5–)8–12 × c. 0.2 cm, stout, nodding to deflexed. *Spathe* 5–10 × 1.5–2.5 cm, triangular, subcucullate, base clasping peduncle, apex long-acuminate, softly leathery. *Spadix* sessile but basally decurrent on spathe, 3–7 × 0.3–0.4 cm, cylindrical. *Flowers* c. 1.3 mm diam., with 6 free tepals and 6 stamens. *Infructescence* with numerous berries, mostly born towards the bottom of the spadix; fruit 10–15 × 10–11 mm, ellipsoid- to bottle-shaped, ripening deep scarlet, with prominent basal chartaceous tepal remains and a large stigmatic remnant; seeds not observed. — Fig. 24.

Distribution — *Malesia*: endemic to and widespread in the Philippines.

Habitat — Lowland to hill, primary to secondary rainforest, 20–650 m altitude.

Note — Very close to *P. lancifolius*, but distinguishable by the larger inflorescences, longer peduncle, wider, subcucullate triangular spathe and generally much more robust habit. It is not known if *P. philippinensis* has a shingling stage.

Other specimens examined: PHILIPPINES: Palawan, Puerto Princessa (Mt Pulgar) Elmer 13039 (E); Luzon, Apayao *Fénix* BS 28190 (BM, K, P, US) Luzon, Bataan, Lamas F.R., *Foxworthy* BS 1640 (A, BO, K, US); Luzon, Isabella Prov., Divilacan, Barangay Bicoiban, lower slopes of Tan-awan ridge, c. 15 km NW of Palanan Point, *Leonardo* Co3548 (A, K, L, PNH, US); Luzon, Manila, *Loher* 2457 (K); Sibuyan, Visayas, Mt Giting-giting, *Madulid* 6913 (A, PNH); Palawan, Penigisan, *Ølsen* 274 (C); Luzon, Nueva Ecija Prov., Mt Umigan, *Ramos & Edaña* BS 26414 (US); Luzon, Bulacan Prov., Angat, *Ramos & Edaña* BS 34031 (SING); Luzon, Palanan, Dimapnat, *Ridsdale et al.* ISU 556 (K, L); Luzon, Bataan, Lamao River, Mt Mariveles, *Williams* 486 (A, K, US).

20. *Pothos englerianus* Alderw.

Pothos englerianus Alderw., Bull. Jard. Bot. Buitenzorg, III, 1 (1920) 381. — [*Pothos sumatranus* Engl. Bot. Jahrb. Syst. 25 (1898) 5 & in Engl., Pflanzenr. 21 (IV.23B) (1905) 40, nom. illeg., non Miq. (1861)]. — Type: Indonesia, Sumatra, 1880, *Forbes* 2361 (BM, lecto selected here). Engler cites two syntypes. The other [Sumatra, *Hillebrand s.n.* (B)] is sterile and unsuitable as a lectotype.

[*Pothos engleri* Furtado, nom. ined. in sched. BM]

Slender root-climbing liane. *Shoot system* well differentiated into adherent non-flowering and flowering free lateral branches; eocaul and seedling not observed. *Leaves* chartaceous, drying dull greenish brown; petiole 1.5–2 × 0.1–0.3 cm, relatively stout, sheath rather prominent, extending c. 2/3 length of petiole, basally spreading, apically decurrent; blade 3–15 × 1–4.5 cm, oblong-ovate to oblong-elliptic, base rounded, apex attenuate, apiculate; primary lateral veins arising at c. 60–70°, intramarginal veins 2 per side, the lowermost arising from the base, the next arising from the lower part of the midrib, outer intramarginal vein remaining close and parallel to margin, inner vein c. 5 mm distant, both reaching the leaf tip. *Inflorescence* solitary on a foliage-leafless shoot arising below a foliage leaf, peduncle 4–6 × c. 0.1 cm, rather stout, reflexing at c. 90° so holding inflorescence below shoot. *Spathe* 3–4 × 1–2.5 cm, ovate-lanceolate, slightly cucullate, base slightly clasping peduncle, apex acuminate. *Spadix* sessile c. 2 × 0.3 cm, slightly tapering-cylindrical. *Flowers* c. 1.2 mm diam., with 6 free tepals and 6 stamens. *Infructescence* with few berries (observed from scars only); fruit and seeds not observed. — Fig. 25.

Distribution — *Malesia*: endemic to Sumatra.



Fig. 25. *Pothos englerianus*. a, fertile shoot; b, inflorescence late in anthesis; c, spadix detail (middle); d, spadix detail (tip): a-d, Forbes 2361. Scale bar: a, b, = 2 cm; c = 3.3 mm; d = 1.7 mm.

Habitat — Habitat not specifically recorded, although 1600 m altitude is noted on Hillebrand's syntype.

Note — Similar to *P. laucifolius* (Peninsular Malaysia and Vietnam) but distinguished by the reflexed (not curving) peduncle, broader spathe, and in the shorter and broader petiolar sheath.

Other specimen examined: SUMATERA: No further data, Hillebrand s.n. (B).

21. *Pothos atropurpurascens* M. Hotta

Pothos atropurpurascens M. Hotta, Acta Phytotax. Geobot. 22 (1966) 1. — Type: Malaysia, Sarawak, 4th Div., Bintulu, along Ulu Sg. Kakus from Sg. Biyah to Ulu S. Mubong, 11 Nov 1963, Hirano & Hotta 1011 (KYO, holo; iso L).

Slender to rather robust, heterophyllous, root-climbing liane. Shoot system well differentiated into free lateral flowering and clinging non-flowering branches; cocaul not observed; seedling shingle-leaved. Leaves mid-green adaxially, slightly paler abaxially, chartaceous, drying dull green with the midrib pale yellow and slightly raised; petiole 2–10 × 0.2–0.3 cm, slender, sheath extending to geniculum, clasping basally and frequently for almost its entire length, with a short apical ligule; blade 7–25.5 × 2–8 cm, ovate-elliptic to narrowly oblong-elliptic or oblanceolate, base acute to obtuse, apex rounded and abruptly cuspidate, falcate, minutely apiculate; primary lateral veins arising at 65–80°, with 2 intramarginal veins per side, the lowermost arising from the base, subsequent veins arising from the lower part of the midrib, outer intramarginal vein remaining very close and parallel to margin. Inflorescence solitary, terminal on leafy shoots, by reflexing of the peduncle held inverted beneath the shoot; peduncle (1.5–)2–8 × 0.15–0.25 cm, stout, reflexed c. 90° at the base, yellowish orange-brown. Spathe (2–)4–11 × 2–7 cm, ovate, deeply cucullate, base slightly decurrent on the peduncle, apex acute to attenuate, white stained purple, thinly leathery and prominently net-veined. Spadix sessile, (1.5–)2–5.5 × 0.3–0.7 cm, cylindrical, deep purple-grey. Flowers c. 1.2 mm diam., with 6 free tepals and 6 stamens. Infructescence with several to many berries; fruits 4–15 × 3–10 mm, ovate-ellipsoid; seeds not observed. — Fig. 26.

Distribution — *Malesia*: endemic to N Borneo.

Habitat — Primary to disturbed secondary lowland to upper hill forest, occasionally on ultramafics, 125–1230 m altitude.

Note — Unique in Borneo by the deeply cucullate, softly leathery, white, purple-flushed spathe. Clearly very closely allied to *P. kingii* (Peninsular Malaysia and southern Thailand) but separable by the abruptly cuspidate leaf tip and thinner-textured, much paler spathe.

Other specimens examined: BORNEO: BRUNEI DARUSSALAM: Labi, Wong Kadir, near Mendaram, Coope 7181 (BRUN, K); Temburong, Selapon, lower slopes of Bk. Beliton, S of village, J. Dransfield 6955 (BRUN, K); Temburong, Batu Apoi F.R., ridge W of Kuala Belalong Field Studies Center, Poulsen 180 (AAU, BRUN, K). SABAH: Sandakan, mile 8 Telupid - Ranau road, Abau & Saikeli SAN 79445 (K, L, SAN); Ranau, Bk. Kulung, near Bk. Hampuan, SE base of Mt Kinabalu, Beauvan 8361 (US); Sandakan, Kabili-Sepilok F.R. compartment 10, Sg. Kinabatangan, Castro 7050 (K, SING); Penibukan, Clemens & Clemens 31126 (A, BM, K, SING); Penibukan, Clemens & Clemens 35003 (BM, BO); Penibukan, Dehobang, via Labuan, Clemens & Clemens s.n. (BM); Sandakan, Sepilok F.R., Gibot SAN 73770 (K, SAN); Sandakan, Sepilok F.R., Jalan H. Tanjong, Lassau SAN 71259 (SAN); Lamag, Ulu Sg. Pin, Madani & Saigol SAN 90156 (K, KEP, SAN); Sandakan, Sepilok F.R., Meijer SAN 21234 (K, SAN).

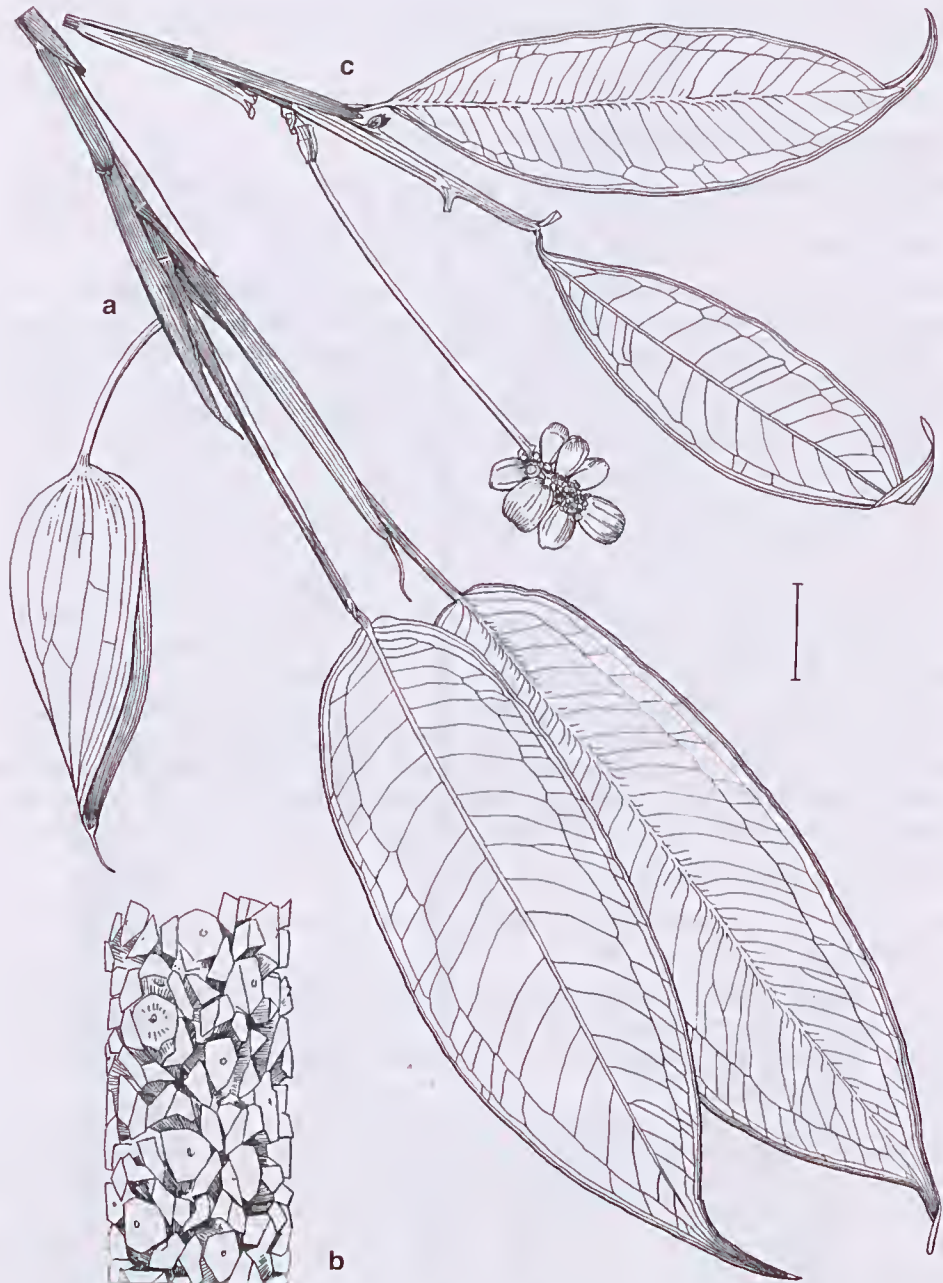


Fig. 26. *Pothos atropurpurascens*. a, fertile shoot in flower; b, spathe detail; c, fertile shoot with mature infructescence: a, Hirano & Hotta 1011; b, Clemens & Clemens 31126; c, Gibot SAN 73770. Scale bar: a, c, = 2 cm; b = 2.2 mm.

22. *Pothos kingii* Hook.f.

Pothos kingii Hook.f., Fl. Brit. Ind. 6 (1893) 553; Engl. in Engl., Pflanzenr. 21 (IV.23B) (1905) 38; Ridl., Mat. Fl. Malay Penins. 3 (1907) 51 & Fl. Malay Penins. 5 (1925) 131; Boyce, Blumea 45 (2000) 189–192, fig. 11a, 11b. — Type: Malaysia, Perak, Larut, *Kunstler* ('Dr King's Collector') 2723 (K, lecto, isolecto CAL, selected by Boyce (2000: 189)).

Pothos grandispathus Ridl., J. Straits Branch Roy. Asiat. Soc. 41 (1904) 48 ('*grandispathia*') & Mat. Fl. Malay Penins. 3 (1907) 51 & Fl. Malay Penins. 5 (1925) 131. — Type: Malaysia, Penang, W Hill, *Curtis s.n.* (SING, holo).

Pothos ridleyanus Furtado, Gard. Bull. Sing. 8 (1935) 150. — [*Pothos ellipticus* Ridl., J. Straits Branch Roy. Asiat. Soc. 41 (1904) 48, nom. illeg., non *P. ellipticus* Moon ex Miq. (1856) (Sri Lanka)]. — Type: Malaysia, Pahang, Pahang River, Kuala Tembilang, *Ridley s.n.* (SING, lecto, selected by Boyce (2000: 189)).

Slender, heterophyllous, root-climbing liane to 7 m. *Stem?*; eocaul not observed; seedling shingle-leaved. *Leaves* bright to mid-green adaxially, slightly paler abaxially, stiffly chartaceous, drying dull green with the midrib pale yellow and prominently raised; petiole 4–12 × 0.2–0.25 cm, slender, sheath extending to geniculum, clasping basally on juvenile and mature sterile shoots, prominent and sheathing to $\frac{4}{5}$ of its length on fertile shoots; blade 5–25 × 2.3–9 cm, ovate to elliptic or lanceolate, base acute to rounded, apex attenuate-mucronate, acute or attenuate, minutely apiculate; primary lateral veins arising at 45–65°, with 3 intramarginal veins per side, the lowermost arising from the base, subsequent veins arising from the lower part of the midrib, outer intramarginal vein remaining very close and parallel to margin, the second and third progressively nearer to the midrib, all reaching the leaf tip. *Inflorescence* solitary, usually subtended by cataphylls on condensed short shoots in the axils of distal leaves, occasionally from such shoots arising (persisting?) on leafless older stems, rarely terminal on leafy shoots, by reflexing of the peduncle held inverted beneath the shoot; peduncle 2–5 × 0.15–0.25 cm, stout, reflexed c. 90° at the base, yellow to orange-brown. *Spathe* 4–10 × 2.5–6 cm, ovate, deeply cucullate, base slightly decurrent on the peduncle, apex acute, deep purple inside and out, softly leathery and rather prominently net-veined. *Spadix* sessile, 2.5–7 × 0.3–0.8 cm, cylindrical, deep purple-brown. *Flowers* c. 1 mm diam., with 6 free tepals and 6 stamens. *Infructescence* with 4–10 berries; fruits c. 2–4 × 2.5–9 mm, oblong-ellipsoid; seeds not observed. — Fig. 27, 28.

Distribution — Thailand (south peninsular). In *Malesia*: Peninsular Malaysia.

Habitat — Shady to open areas in wet, occasionally swampy, primary forest, often on steep slopes, 50–1200 m altitude.

Notes — Distinctive in Peninsular Malaysia due to its deeply cucullate, softly leathery, deep purple spathe. Fertile specimens are instantly recognizable but sterile material could be confused with vegetatively similar *P. leptostachyus* (with which *P. kingii* is often allopatric), and *P. curtisii*. *Pothos atropurpurascens* (Borneo) is most similar but readily separable by the abruptly cuspidate leaf tip and thinner-textured, much paler spathe.

It is remarkable that such a distinctive species could have been described on three separate occasions, especially given that the types are all good specimens and are, it would seem, not open to misinterpretation.

Other specimens examined: PENINSULAR MALAYSIA: Johore, Kota Tinggi, *Corner s.n.* (SING); Terengganu, Kemaman, Bk. Kajang *Corner s.n.* (SING); Pahang, near Kota Glanggi, *Henderson SING 22411* (SING); Johore, Sg. Kayu, *Keah s.n.* (SING); Pahang, Fraser's Hill, below lodge, *MEDP 1269* (UPM); Perak, *Scortechinii 1450* (K); Pahang, P. Tawar, *Ridley s.n.* (SING); Perak, *Wray 3277* (SING); Pahang, Endau Rompin, Sg. Kincin, base camp loop, *Zainudin 2793* (UKMB).



Fig. 27. *Pothos kingii*. a, fertile shoot; b, petiole detail; c, inflorescence; d, spadix detail: a–d, Boyce 1222. Scale bars: a = 8 cm; b = 4 cm; c = 1 cm; d = 5 mm.

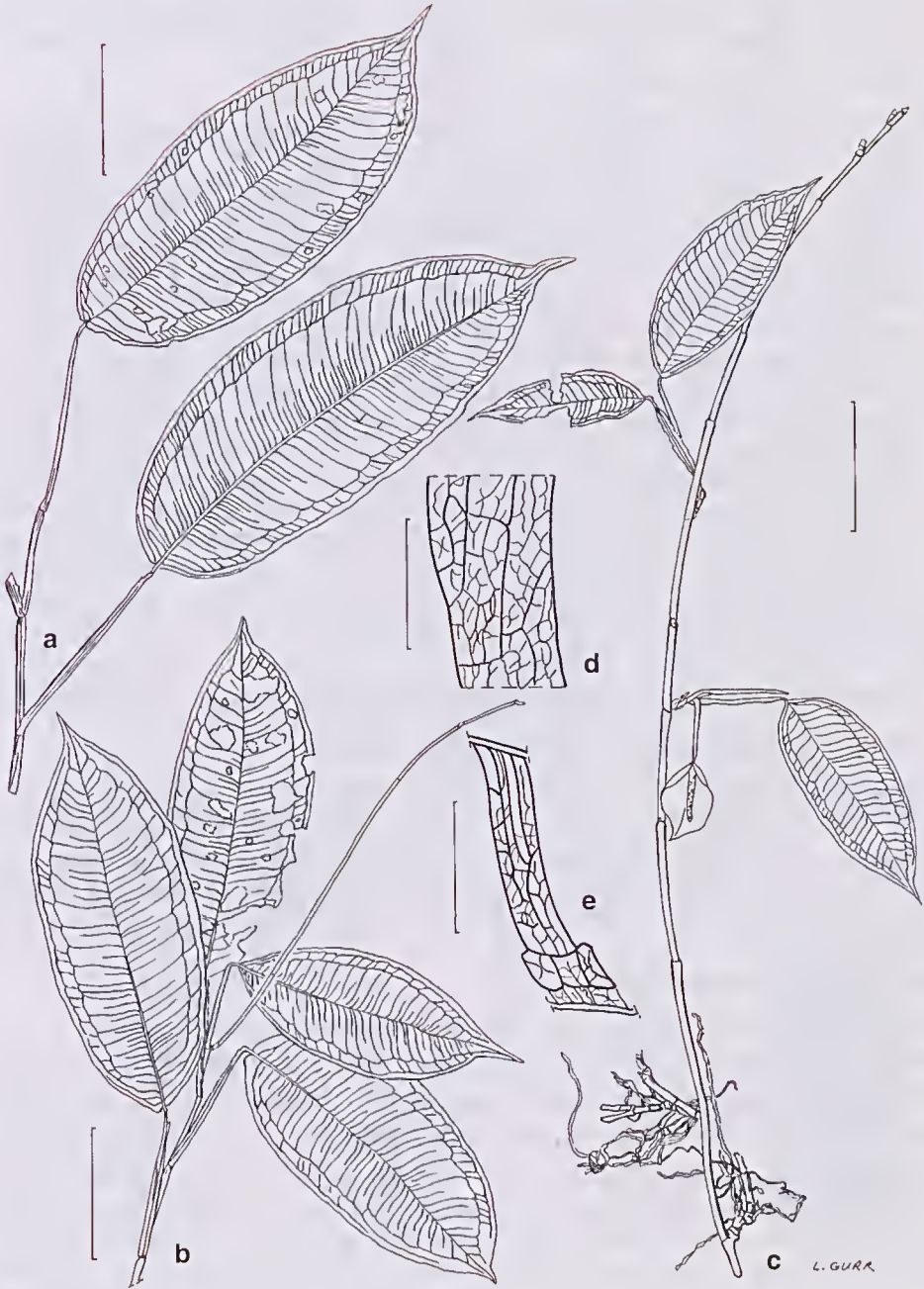


Fig. 28. *Pothos kingii*. a, mature sterile shoot; b, lower part of foraging shoot; c, flowering shoot arising directly from mature sterile shoot; d, venation detail; e, venation detail with midrib and intermarginal vein: a-e, Boyce 1222. Scale bars: a = 6 cm; b, c = 8 cm; d = 1.5 cm; e = 5 mm.

23. *Pothos salicifolius* Ridl. ex Burkill & Holttum

Pothos salicifolius Ridl. ex Burkill & Holttum, Gard. Bull. Straits Settlements. 3 (1923) 88 ('*salicifolia*'); Ridl., Fl. Malay Penins. 5 (1925) 130. — Type: Malaysia, Pahang, Fraser's Hill, near Selangor border, 24 Sep 1922, Burkill & Holttum FMS 7827 (SING, holo).

[*Pothos melaleucoides* Furtado, nom. ined. in sched.]

Slender to rather stout, (heterophyllous?), root-climbing liane to c. 8 m high. *Shoot system* rather weakly differentiated into flowering and non-flowering branches, terminal portions tending to be prominently zig-zagging; eocaul & seedling not observed. *Leaves* stiffly coriaceous, drying dull dark greenish or brown, abaxial surface yellowish to orange-yellow; petiole 2–3 cm long, relatively stout, shallow-caniculate, stoutly geniculate, especially on larger leaves, sheath not prominent, extending to just below geniculum, basally clasping, apically briefly ligulate, soon falling to leave a conspicuous wide scar, especially on larger leaves; blade 8.5–25 × 0.7–3 cm, very narrow elongate lanceolate-elliptic, base obtuse to subtruncate, apex acute to long-acuminate, apiculate; primary lateral veins arising at 30–45°, very prominent, intramarginal veins prominent, 2 per side of the midrib, the entire abaxial surface notably raised-reticulate veined. *Inflorescence* solitary on very abbreviated foliage-less shoots arising from below mid- and distal leaves on leafy shoots; peduncle 7–9 × c. 0.1 cm, arching. *Spathe* 3.5–5 × 0.85–1 cm, lanceolate, spreading, conspicuously veined, base slightly clasping peduncle, apex acute to mucronate, dark purple. *Spadix* briefly stipitate; stipe 1–2 mm long; fertile portion 2–3.5 × c. 0.2 cm, cylindrical, straight to very slightly curved, yellow. *Flowers* c. 1.2 mm diam.; tepals 6, free; stamens 6. *Inflorescence* with rather few berries; fruit 9–10 × 4–6 mm, globose, ripening deep scarlet; seeds not observed. — Fig. 29.

Distribution — *Malesia*: endemic to Peninsular Malaysia (Pahang and Negeri Sembilan).

Habitat — Upper hill to lower montane forest, 820–1230 m altitude.

Note — Unmistakable by virtue of the long, narrow leaves with very prominent abaxial surface reticulate venation; similar leaves occur in no other species of *Pothos*.

Other specimens examined: PENINSULAR MALAYSIA: Pahang, top of Fraser's Hill, beyond Red Cross cottage, Nicolson 1174 (B, K, L, SING, US); Negeri Sembilan, Sg. Angri, near bungalow, Nur SFN 11663 (A, BM, BO, K, KEP, SING); Pahang, Fraser's Hill, Pine Tree Hill trail, Stone 14025 (KLU, L, MO, SING).

24. *Pothos brevivaginatus* Alderw.

Pothos brevivaginatus Alderw., Bull. Jard. Bot. Buitenzorg, III, 1 (1920) 381. — Type: Indonesia, Sumatera, W Sumatera, G. Talamau, 9 May 1917, Binneneijer 651 (BO, holo).

Pothos longipedunculatus Ridl., Kew Bull. 1925 (1925) 93, nom. illeg., non Engl. (1905), *syn. nov.* — Type: Indonesia, Sumatera, Bengkulu ('Bencoolen'), Brooks s.u. (K, holo).

Somewhat robust, heterophyllous(?), root-climbing liane. *Shoot system* architecture not fully known, but flowering shoots free and lateral; eocaul and seedling not observed. *Leaves* very stiffly chartaceous, drying orange-brown; petiole 1–4 × 0.2–0.25 cm, rather stout, 'D' shaped in cross-section, sheath barely prominent, extending c. 1 cm along petiole, soon falling; blade 12–28 × 4–7 cm, lanceolate to slightly oblanceolate, base, apex abruptly cuspidate-attenuate, mucronate; primary lateral veins prominent, arising at 70–80°, intramarginal veins 2 per side, the outer intramarginal vein remaining very close and parallel to margin, higher order venation prominently reticulate. *Inflorescence* solitary, usually subtended by cataphylls on condensed short shoots arising from below the axils of distal leaves, held inverted beneath the shoot by reflexing of the peduncle; peduncle 12–45 × 0.1–0.15 cm, slender, reflexed 90° at the



Fig. 29. *Pothos salicifolius*. a, fertile shoot; b, spadix detail; c, adult adherent shoot; d, juvenile sterile shoot: a-b, Nur SFN 11663; c, Nicolson 1174; d, Stone 14025. Scale bar: a, c, d = 2 cm; b = 1.7 mm.



Fig. 30. *Pothos brevivaginitus*. a, b, fertile shoots; c, spadix detail: a-c, Brooks s.n. Scale bar: a, b = 2 cm; c = 2.2 mm.

base, dark purple-green. *Spathe* 2.5–12.5 × 0.6–4 cm, triangular-lanceolate, spreading, base clasping the peduncle, apex acute, briefly apiculate, dull greyish-green, chartaceous. *Spadix* briefly (c. 1 mm) stipitate, (2.5–)6–7.6 × 0.3–0.6 cm, cylindrical to tapering-cylindrical, pale green. *Flowers* c. 1 mm diam., with 6 free tepals and 6 stamens. *Infructescence* not observed. — **Fig. 30.**

Distribution — *Malesia*: endemic to SW Sumatera.

Habitat — Upper hill forest, 980 m altitude.

Notes — Unmistakable by the extremely long peduncle, rather small spathe and the notably raised-reticulate venation on the abaxial leaf surface. The plant is slightly reminiscent of *P. salicifolius* (Peninsular Malaysia), but readily distinguished by the much wider leaf blade and considerably longer, deflexed peduncle.

The type of Ridley's illegitimate *P. longipedunculatus* is an excellent match for the type of Alderwerelt's earlier *P. brevivaginatus*.

25. *Pothos wallichii* Hook. f.

Pothos wallichii Hook.f., Fl. Brit. Ind. 6 (1893) 553; Engl. in Engl., Pflanzenr. 21 (IV.23B) (1905) 41; Engl. in Engl., Pflanzenr. 21 (IV.23B) (1905) 41; Merr., J. Straits Branch Roy. Asiat. Soc., special ed. (1921) 87. — *Pothos barberianus* Schott var. *wallichii* (Hook.f.) Ridl., Mat. Fl. Malay Penins. 3 (1907) 49 & Fl. Malay Penins. 5 (1925) 129. — Type: Penang, *Porter sub Wallich Cat. No. 4439B* (K-WAL, lecto selected here; isolecto BM, K).

Slender, (heterophyllous?), root-climbing liane. *Shoot system* rather weakly differentiated into flowering and non-flowering branches; eocaul and seedling not observed. *Leaves* stiffly but thinly chartaceous, drying dull greenish; petiole 6–9 cm long, slender, sheath margins inrolled and thus sheath not prominent, extending to just below geniculum, basally clasping, apically briefly ligulate; blade 6–16 × 2–5 cm, lanceolate to lanceolate-elliptic, base acute to obtuse, apex acute to acuminate, very briefly apiculate; primary lateral veins arising at c. 80°, very fine, intramarginal veins 2 per side of the midrib, the lowermost arising from the base, the next arising from the lowest part of the midrib, outer intramarginal vein remaining very close and parallel to margin, inner vein c. 4 mm distant, both reaching the leaf tip. *Inflorescence* solitary from tips of leafy shoots; peduncle (4–)8–11 × c. 0.1 cm, arching, very rarely reflexed. *Spathe* 4–5 × 0.5–1 cm, lorate, spreading to weakly reflexing, base auriculate, auricle margins inrolled, barely decurrent on the peduncle, apex acute to acuminate. *Spadix* briefly stipitate; stipe c. 2 mm long; fertile portion (5–)6–7.5 × c. 0.2 cm, slender, cylindrical, straight to slightly curved, base unequal, slightly cochleate, creamy-yellow. *Flowers* c. 1.2 mm diam.; tepals 6, free; stamens 6. *Infructescence* with rather few berries, these mostly carried on the basal half of spadix; fruit 9–12 × 4–5 mm, ellipsoid with a prominent stigmatic remnant, ripening deep scarlet; seeds not observed. — **Fig. 31.**

Distribution — *Malesia*: Peninsular Malaysia, Java, Borneo. Probably more common than indicated by the few collections seen.

Habitat — Upper hill forest, 900 m altitude (only recorded from one specimen).

Notes — *Pothos wallichii* is immediately recognizable by the very long and slender inflorescences, arching from leafy shoot tips. It is most similar to *P. volans* but readily distinguished by the much longer stipitate spadix and the narrower spathe.

Hooker cited three syntypes in describing *P. wallichii*. They are conspecific and we have selected the most complete as lectotype. The other syntypes are: Perak, *Scortechini* 621 (K) and Perak, *Wallich* 4439A (K-WAL).

Other specimens examined: PENINSULAR MALAYSIA: Perak, Hermitage, *Curtis* 1327 (K, SING); Johor, G. Pulai, *Nur & Kiah* 7780 (SING); Perak, *Scortechini* 621 (K); Perak, *Scortechini* 621A (BM,

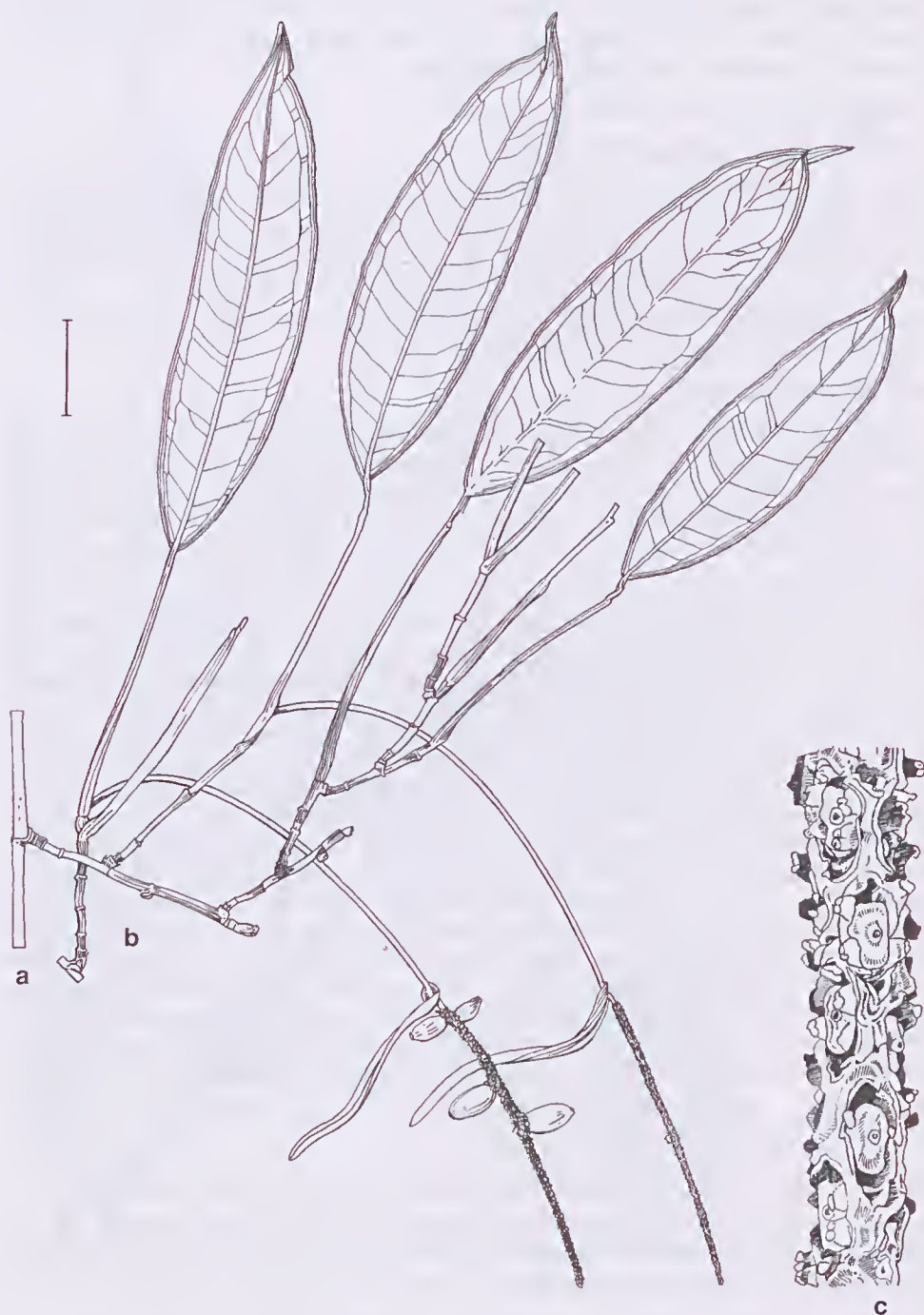


Fig. 31. *Pothos wallichii*. a, fertile shoot in flower; b, fertile shoot in fruit; c, spadix detail: a–c, Clemens & Clemens 20017. Scale bar: a, b = 2 cm; c = 1.7 mm.

SING); Perak, *Wallich* 4439A (K-WAL). JAVA. W Java, Ujung Kulon Reserve, Mt Pajung, *Kostermans* sub UNESCO 192 (A, BO, K, L). SARAWAK. 1st Div., G. Pueh (Mt Poi), *Clemens* & *Clemens* 20017 (A, BO, K, MO). KALIMANTAN. *Korthals* s.n. (BO, K, L, P).

26. *Pothos volans* P.C. Boyce & A. Hay, sp. nov.

Pothos wallichii propinquus est, sed ab eo spadice multo brevior spatha latiore differt. A *P. lancifolio* pedunculo multo tenuiore arcuato (no basi flexo) distinguitur. Ab ambitis speciebus habitus manifeste anfractuosus surculorum liberorum lateralium florentium distinctus est. — Type: Brunei Darussalam, Temburong, Amo, Ulu Belalong, L.P. 382, ridge W of campsite, 22 Jan 1994, *J. Dransfield* 7419 (K, holo; iso BRUN).

Slender, heterophyllous(?), root-climbing liane. *Shoot system* well differentiated into free lateral prominently zig-zagging flowering and adherent non-flowering shoots; eocaul and seedling not observed. *Leaves* deep green adaxially, slightly paler abaxially, chartaceous, drying yellow to greyish green with the midrib pale yellow and raised abaxially; petiole 1–3 × 0.1–0.25 cm, slender, sheath rather prominent, extending to base of geniculum, clasping basally, minutely ligulate apically; blade 2.5–15.5 × 1–4.5 cm, narrowly elliptic or lanceolate, occasionally weakly oblique, base subacute to obtuse, apex attenuate-mucronate, acute or attenuate, minutely apiculate; primary lateral veins arising 75–85°, intramarginal veins 2 per side, the outer intramarginal vein remaining very close and parallel to margin. *Inflorescence* solitary, terminal on leafy shoots, held arching from the tip of the shoot; peduncle 6–7 × 0.05–0.1 cm, very slender, arching, pale green. *Spathe* 4–5 × 0.9–1.5 cm, broadly ovate-triangular-lanceolate, erect and covering spadix, base clasping peduncle, apex acuminate, apiculate, pale green, thinly papery. *Spadix* sessile, 2–3 × 0.15–0.25 cm, slender cylindrical, yellow-green. *Flowers* c. 1.1 mm diam., with 6 free tepals and 6 stamens. *Infrcnescence* with few berries; fruits 7–10 × 4–6 mm, ellipsoid; seeds not observed. — Fig. 32.

Distribution — *Malesia*: endemic to Borneo (Sarawak and Brunei Darussalam).

Habitat — Ridgetop hill to upper hill kerangas, at 760–820 m altitude.

Note — Similar to *P. wallichii* but differing by the much shorter sessile spadix and broader spathe. It is distinguished from *P. lancifolius* by the much more slender, arching (not basally bent) peduncle. The prominent zig-zagging of the free lateral flowering shoots is distinctively different from either species.

Other specimens examined: BORNEO: SARAWAK: 1st Div., Tebakang area, summit of Bk. Alak, *Awa* & *Paie* S 45642 (K, KEP, L, SAN, SAR, US). BRUNEI DARUSSALAM: Temburong, Amo, Bk. Belalong, *J. Dransfield* 7169A (BRUN, K). Temburong, Amo, Bk Belalong, ridge to false summit, *K.M. Wong* 1488 (BRUN, K).

27. *Pothos mirabilis* Merr.

Pothos mirabilis Merr., Philipp. J. Sci. 21 (1922) 516. — Type: Malaysia, Sabah, Lubuk and Sugut Distr., Sumawang River valley, 21 Sep 1918, *Agama* BS 664 (US, lecto selected here; isolecto K, P, UCL; A (photo of destroyed PNH sheet)). Merrill cites three syntypes; that chosen as lectotype is the only fertile collection; the US duplicate is in the best condition. The other syntypes are: Malaysia, Sabah, Batu Lima, *Ramos* 1260 and Malaysia, Sabah, Sandakan, Myburgh, *Elmer* 20364. The K specimen is the only duplicate of the *Ramos* collection traced, and is sterile. All located duplicates of the widely distributed *Elmer* 20364 are sterile.

Rather slender, heterophyllous(?), root-climbing liane. *Shoot system* architecture not fully known, but flowering shoots free and lateral; eocaul and seedling not observed. *Leaves* chartaceous, drying yellowish green with the apical geniculum almost black; petiole 4–12 × 0.25–0.4 cm, stout, sheath prominent, extending to base of geniculum



Fig. 32. *Pothos volans*. a, fertile shoot in flower; b, venation detail; c, inflorescence; d, whole flower, three quarter view; e, whole flower, top view; f, whole flower, longitudinal section; g, ovary, transverse section; h, embryo, side view; i, flower, tepals removed, three quarter view; j, single stamen, external view; k, tepal, external view; l, tepal, side view; m, tepal, external inside view; n, inflorescence: a–n, *Dransfield 7419*. Scale bar: a = 3 cm; b = 2 mm; c = 1 cm; d, e = 0.7 mm; f = 0.4 mm; g = 0.6 mm; h = 1 mm; i = 0.6 mm; j = 0.5 mm; k–m = 0.7 mm; n = 1 cm.

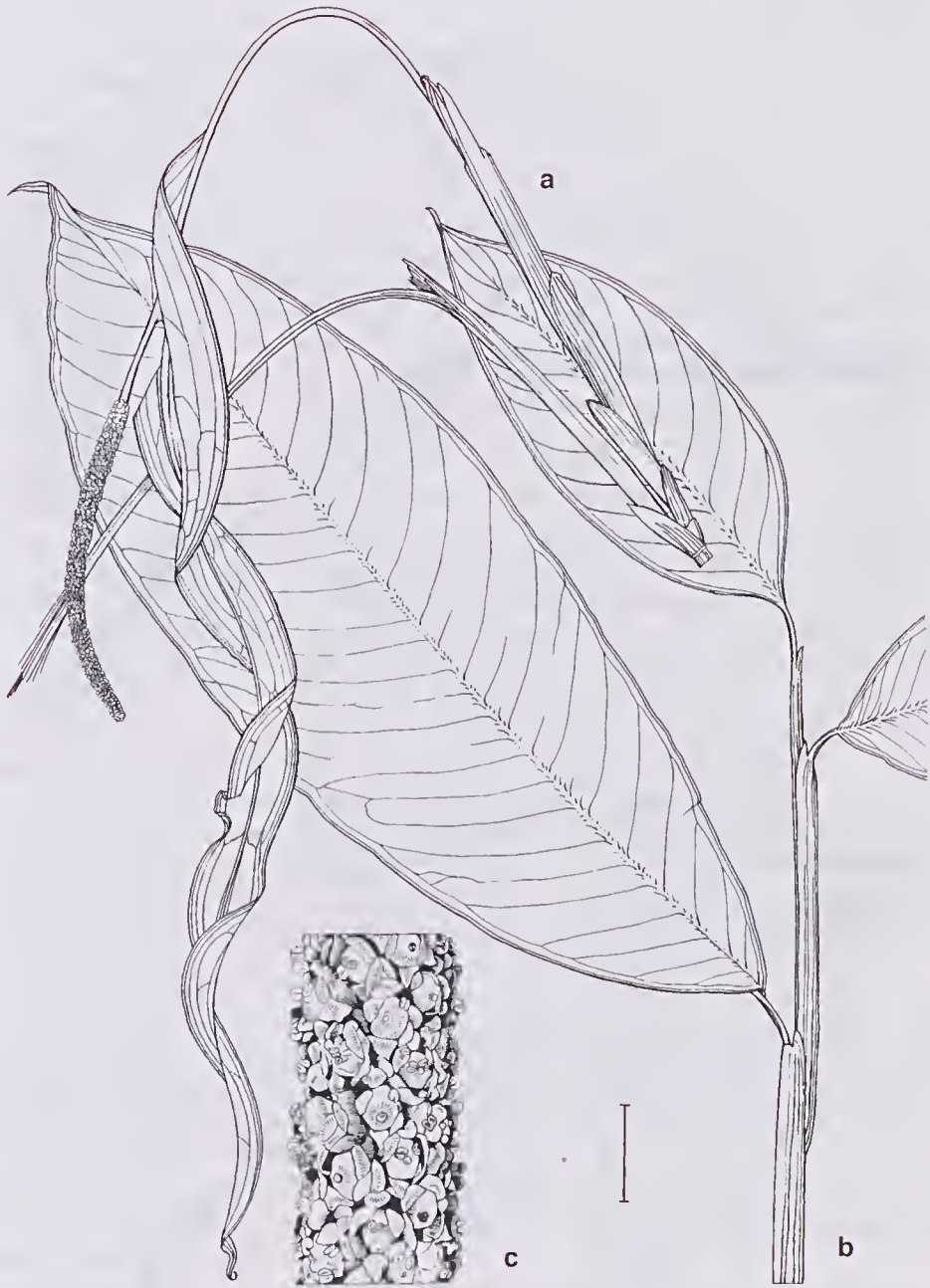


Fig. 33. *Pothos mirabilis*. a, fertile shoot; b, adult sterile shoot; c, spadix detail: a-c, *Agama* BS 664. Scale bar: a, b = 2 cm; c = 2.7 mm.

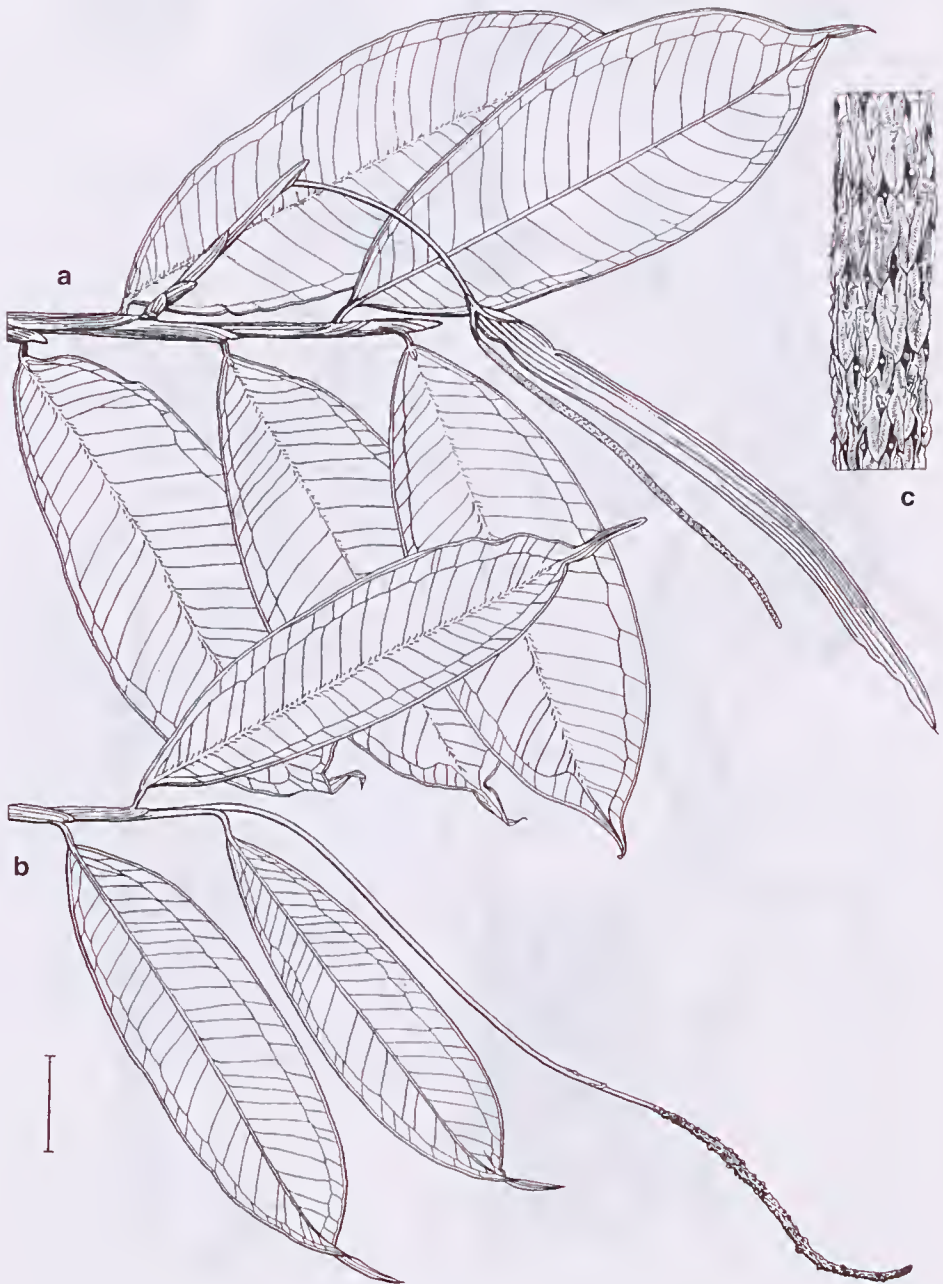


Fig. 34. *Pothos mirabilis*. a, fertile shoot; b, fertile shoot, early stages of infructescence; c, spadix detail: a & c, Moulton's native collector 11; b, 'Native collector' 1479. Scale bar: a, b = 2 cm; c = 2.2 mm.

and overtopping it by two prominent ligules, clasping the shoot for almost its entire length; blade 12–28 × 3–9.5 cm, elliptic to oblong-elliptic or falcate-lanceolate, somewhat oblique, base subacute, apex acute to attenuate-mucronate, falcate, minutely apiculate; primary lateral veins arising 75–80°, intramarginal veins 2 per side, the outer intramarginal vein remaining close and parallel to margin. *Inflorescence* solitary, terminal on leafy shoots, held arching from the tip of the shoot, very rarely produced from foliage-leafless shoots arising from otherwise leafy shoots; peduncle 6–17 × 0.05–0.15 cm, slender, very long and curving, dark purple-green. *Spathe* extremely elongate, 19–37 × 1–2 cm, very narrowly ovate, drooping and twisting into two or more graceful elongate spirals, base long-decurrent for up to 5 cm on peduncle, apex long acuminate, dark purple with paler longitudinal reticulations, drying very thin and somewhat shiny, degrading with fruiting and persisting as diaphanous netted tissue. *Spadix* stipitate; stipe 1–2.5 × c. 0.1 cm, very slender; fertile portion (6–)12–14 × c. 0.3 cm, very slender curving cylindrical, dark greyish purple. *Flowers* c. 1.6 mm diam., with 6 free tepals and 6 stamens. *Infructescence* with few berries; fruits 7–10 × 3.5–6 mm, oblong-ellipsoid; *seeds* not observed. — Fig. 33, 34.

Distribution — *Malesia*: endemic to Borneo.

Habitat — Lowland forest on yellow sandy loam, 20–300 m altitude.

Note — A species of extraordinary appearance in flower and unmistakable by the enormously elongated and twisted pendent spathe. The inflorescences are mostly produced from the tips of leafy shoots and this together with the long slender peduncle would seem to ally *P. mirabilis* with, e.g. *P. volans* and *P. wallichii*, from which it may be distinguished by the considerably greater stature of the plant, the long-stipitate spadix and the aforementioned spathe.

Ridley's *Pothos longus* (which has priority) may belong here. See below under 'Insufficiently known species'.

Other specimens examined: BORNEO: SABAH: Sandakan, Ulu Sg. Olgan, below B. Panandawan, Labuk Sugut, *Aban et al.* SAN 66890 (K, SAN); Sandakan, Myburgh, *Elmer* 20364 (A, C, K, MO, NSW, P, SING, UCL); Tawau, Luasong camp, *Madani* SAN 107943 (SAN); Beaufort, Montineor road, mile 12, Kg. Bambang, *Madius* SAN 49253 (K, SAN); No further data, *Moulton's native collector* 11 (BM); No further data, 'Native collector' 1479 (K, US); Batu Lima, *Ramos* 1260 (K). KALIMANTAN: E Kalimantan, central Kutei, Gelajan River, G. Kelopok, near Tabang, *Kostermans* 10536 (BO, L).

28. *Pothos oxyphyllus* Miq.

Pothos oxyphyllus Miq., Bot. Zeit. 14 (15 Aug. 1856) 561 & Fl. Ned. Ind. 3 (25 Dec 1856) 181, t.38 ('oxyphylla'); Schott, Prodr. Syst. Aroid. (1860) 559–560; Engl. in A. & C. DC, Monogr. Phan. 2 (1879) 89 & in Engl., Pflanzenr. 21 (IV.23B) (1905) 37; Koorders, Exkursfl. Java, 1 (1911) 251; Backer & Bakh.f., Fl. Java, 3 (1968) 103. — Type: Indonesia, W Java, G. Salak, *Teysmann s.n.* (L, holo).

Pothos smmatranis Miq., Fl. Ned. Ind., Eerste Bijv. (1861) 596; Engl. in A. & C. DC, Monogr. Phan. 2 (1879) 94 *syn. nov.* — Type: Indonesia, Sumatera Barat, near Lubualang, *Teysmann s.n.* (BO, holo; iso L).

Pothos korthalsianus Schott, Ann. Mus. Bot. Lugd.-Bat. 1 (1864) 284, *syn. nov.* — Type: Indonesia, Sumatera, *Korthals s.n.* (L, holo).

Pothos inaequalis Ridl., J. Straits Branch Roy. Asiat. Soc. 41 (1904) 47, *syn. nov.* — Type: Malaysia, Pahang, Palau Tawas, 20 Aug 1891, *Ridley* 2391 (SING, holo; iso BM, K).

Pothos jacobsonii Alderw., Bull. Jard. Bot. Buitenzorg, III, 1 (1920) 380, *syn. nov.* — Type: Indonesia, Sumatera, Bengkulu, G. Dempo, Aug 1916, *Ajoeb* 486 (BO, holo).

Slender, homeophyllous, diffuse-branched root-climbing liane. *Shoot system* rather poorly differentiated into adherent, non-flowering and free lateral flowering branches, usually with considerable flagellate shoot growth; flowering shoot abbreviated, arising from below the leaf axil of a fully developed leaf, or from an older naked portion of stem, leafless except for subtending foliage leaf, with several small cataphylls; eocaul not observed; seedling shingle-leaved, then abruptly producing adult leaves. *Leaves* thinly chartaceous, drying pale brownish green; petiole 2.5–3 cm long, slender, often sheathing stem with just the geniculum and blade spreading; sheath rather prominent, reaching to just below geniculum and extending by two very small ligules; blade 6–25 × 2–8 cm, oblong-elliptic to oblong-lanceolate, very slightly falcate, unequal, occasionally quite strongly so, base subacute to minutely truncate, apex falcate, acuminate to stoutly long-attenuate, briefly minutely apiculate; primary lateral veins arising at 80–90°, intramarginal veins 2 per side, the lowermost arising from the base, outer intramarginal vein remaining very close and parallel to margin; higher venation fine but very distinctly reticulate. *Inflorescence* solitary, although shoots always reiterating and thus rarely two inflorescences at different stages of maturity may be present; peduncle 1.3–5 cm, rather slender, erect, green to purple-green. *Spathes* 1.3–2.2 × 0.3–0.4 cm, oblong-ovate, reflexed, falling early in fruit development leaving only basal portion, base rounded, barely decurrent on the peduncle, apex obtuse, filamentous-mucronate, purple. *Spadix* sessile to very briefly stipitate; stipe 0–1.5 mm long; fertile portion 2.5–4 × 0.2–0.4 cm, cylindrical, straight to slightly curved, white. *Flowers* c. 1.5 mm diam., with 6 free tepals and 6 stamens. *Infructescence* with few berries; fruit 6–10 × 4–7 mm, ellipsoid, ripening deep red; seeds not observed. — Fig. 35.

Distribution — *Malesia*: Sumatera, Peninsular Malaysia, Java. Much more common than the rather few collections might suggest.

Habitat — Primary to slightly disturbed lowland to hill forest, almost always on inundated soils, 25–650 m altitude.

Notes — Most similar to *P. inequilaterus* (Philippines) especially in the form and venation of the leaf blade, but readily distinguished by the larger inflorescences. It is a rather variable species, especially with regard to the number of inflorescences and their size, hence the surprisingly numerous synonyms.

Pothos oxyphyllus is almost always associated with inundated soils. At Pasoh F.R., Negeri Sembilan it occurs in extensive thickets in standing water.

Other specimens examined: PENINSULAR MALAYSIA: Selangor, Gombak, Ulu Gombak F.R., *Boyce* 678 (K, KEP); Perak, Matang, Bubu F.R., Compartment 76, *Boyce* 699 (K, KEP); Negeri Sembilan, Pasoh F.R., trail to and environs of Canopy Walkway, *Boyce* 1336 (K, KEP); Terengganu, Kemaman, Bk. Kajang, *Corner s.n.* (SING); Pahang, near Kota Glanggi, *Henderson s.n.* (SING); Pahang, Tembeling, *Henderson s.n.* (BO, SING); Johore, Ulu Kajang, *Holtum SFN* 10912 (K, SING); Perak, Tanjok Pondok F.R., 12 miles N of Taiping, *Nicolson* 1083 (US); Selangor, Bk. Pajong Kajang, *Symington* 24246 (K, SING). SUMATERA: Aceh, NE of Krung Luas, E of Trumon, *Asdat* 70 (BO); Aceh, G. Leuser N.P., Sg. Kloet, along Krung Lembang, vicinity of Pucuk Lembang, *de Wilde & de Wilde-Duyffes* 20027 (BO, L); Sumatera Utara, Bk. Lawang, Bohorok, Langkat, *Soedarsono* 226 (BO), 243 (BO); No further data, B. Raja, *H.F. Sun* 9953 (BO). JAVA: W Java, G. Cipuli, *Bakhuizen van den Brink* 4216 (BO, L); W Java, G. Cibodas, Tjampea, *Bakhuizen van den Brink* 5689 (BO, K, L, P); W Java, Jakarta, G. Pangar, *Bakhuizen van den Brink* 6122 (BO, L); W Java, G. Cibodas, Tjampea, *Hallier s.n.* (BO); No further information, *Hasskarl s.n.* (L, P); E Java, *Teysmann s.n.* (K, L); W Java, G. Cibodas, Tjampea, *van Steenis* 610 (BO, L).

29. *Pothos inaequilaterus* (C. Presl) Engl.

Pothos inaequilaterus (C. Presl) Engl. in A. & C. D.C., *Monogr. Phan.* 2 (1879) 88 & in Engl., *Pflanzenr.* 21 (IV.23B) (1905) 37; Merr., *Enum. Philippine Pl.* 1 (1922) 172. —



Fig. 35. *Pothos oxyphyllus*. a, fertile shoot; b, fertile shoot, detail; c, spadix detail; d, fertile shoot, early stages of infructescence; e, fertile shoot, mature infructescence: a-d, Boyce 678. Scale bar: a, b, d, e = 2 cm; c = 2.2 mm.

Scindapsus inaequilaterus C. Presl, Epimel. Bot. (1851) 240. — [*Pothos cumingianus* Schott, Oesterr. Bot. Wochenbl. 5 (1855) 19 ('*cumingianus*') & Aroideae, 24 (1856–1857) t.50 & Prodr. Syst. Aroid. (1860) 570–571, nom. superfl. pro *P. inaequilaterus*]. — Type: Philippines, Luzon, Albay Prov., 1841, *Cuming 908* (PRG, holo; iso BM, E, G, K, L, LE, M, P).

Slender, (homeophyllous?), root-climbing liane. *Shoot system* rather poorly differentiated into adherent non-flowering, and free lateral flowering branches; eocaul & seedling not observed; flowering shoot abbreviated, arising from below the leaf axil of a fully developed leaf, or from an older naked portion of stem, leafless except for subtending foliage leaf, with several well-developed cataphylls. *Leaves* thinly chartaceous, drying dull grey greenish; petiole 2–5 cm long, slender, rarely rather stout, sheath weakly prominent, extending to just below geniculum and extending above it by two small ligules; blade 10–25 × 3.5–12 cm, oblong-elliptic, slightly falcate, unequal, occasionally quite strongly so, base subacute to minutely truncate, apex prominently falcate, acuminate to attenuate, briefly apiculate; primary lateral veins arising at c. 35°, intramarginal veins 2 per side, the lowermost arising from the base, outer intramarginal vein remaining very close and parallel to margin, inner vein c. 1 cm distant, both reaching the leaf tip; higher venation fine but very distinctly reticulate. *Inflorescence* several together; flowering shoots always reiterating and thus several inflorescences at various stages of maturity usually present; peduncle 3–7 cm, rather slender, erect or curving, dull green. *Spathe* 1–1.2 × 0.7–1 cm, ovate to oblong-ovate, spreading to slightly reflexed, base rounded, barely decurrent on the peduncle, apex obtuse, very weakly beaked. *Spadix* sessile to briefly stipitate; stipe 0–2.5 mm long; fertile portion 1–2 × 0.2–0.4 cm, cylindrical, straight to slightly curved, base rounded. *Flowers* c. 1.1 mm diam., with 6 free tepals and 6 stamens. *Infructescence* with few berries; fruit c. 10 × 5 mm, globose to ellipsoid, ripening deep scarlet; seeds not observed. — Fig. 36.

Distribution — *Malesia*: endemic to and widespread in the Philippines.

Habitat — Secondary forest, 400–900 m altitude.

Note — Unmistakable by the clusters of small inflorescences and the prominently reticulate higher venation. In blade shape and venation *P. inaequilaterus* is most similar to *P. oxyphyllus* (Sumatera, Peninsular Malaysia, Java) and there has been much confusion between them in herbaria and literature, especially with regard to synonymy; all the above synonyms have been until recently associated with *P. oxyphyllus*. Nevertheless, *P. inaequilaterus* is readily distinguished from *P. oxyphyllus* by its smaller, clustered inflorescences.

Other specimens examined: PHILIPPINES: Luzon, Quezon N.P., *Croat 53004* (MO); Luzon, Camarines Norte, Balu, Bicol N.P., *Mabesa 836* (A); Mindanao, Agusan Prov., Tangao So., San Mateo Bo., Butuan, *Mendoza PNH 41913* (SING); Mindanao, Surigao Prov., Mt Kabatuan, *Mendoza & Convozar PNH 10533* (PNH, SING); Mindanao, Davao Prov., Compostela, Mapatat Barrio, 70 km NE of Davao, *Nicolson 708* (K, PNH, US); Samar, Loquilocan Barrio, *Nicolson 808* (US); Samar, Catubig River, *Ramos BS 24474* (A, BO, K, MO, P, SING, US); Mindanao, Agusan, Tungao logging camp, *Villan PNH 98071* (PNH); Leyte, *Wenzel 357* (A, BM, MO, US); Surigao, *Wenzel 3056* (A, BO, K, MO).

30. *Pothos brevistylus* Engl.

Pothos brevistylus Engl. Bull. Soc. Tosc. Ort. 4 (1879) 267; Engl. in Beccari, *Malesia* 1 (1883 ('1882') t. 16, f. 10–13; Engl. in Engl. *Pflanzenr.* 21 (IV.23B) (1905) 37–38 ('*brevistylus*'); Ridl., *J. Straits Branch Roy. Asiat. Soc.* 44 (1905) 188; Merr., *J. Straits Branch Roy. Asiat. Soc.*, special ed. (1921) 86. — Type: Malaysia, Sarawak, 1st Div., Kuching, Nov 1871 *Beccari p.b. 3984* (FI, holo; iso B, K).

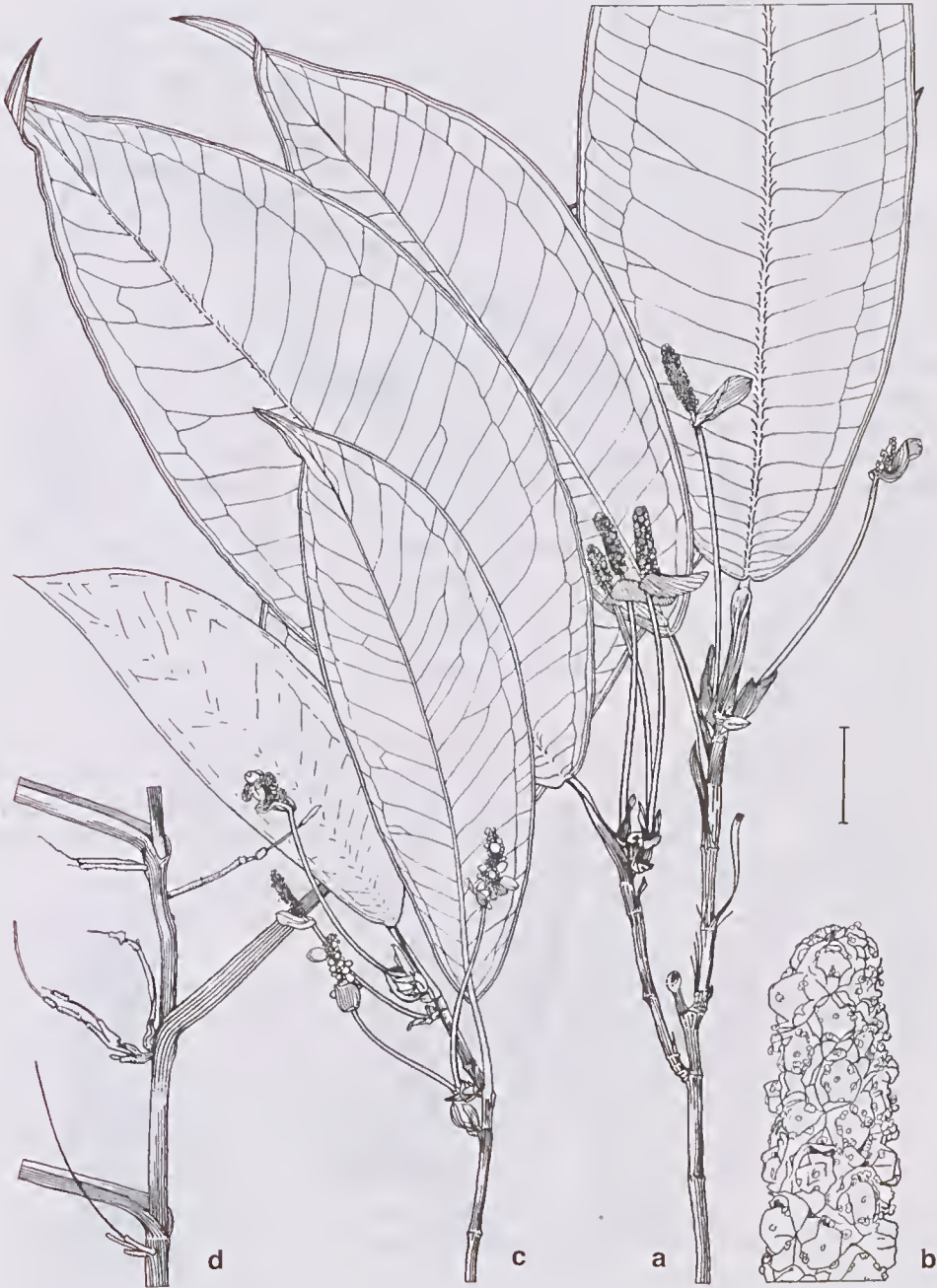


Fig. 36. *Pothos inaequilaterus*. a, fertile shoot; b, spadix detail; c, fertile shoot, early and mature stages of infructescences; d, adherent mature shoot detail: a-b, Wenzel 357; c, Mabesa 836; d, Croat 53004. Scale bar: a, c, d = 2 cm; b = 3.3 mm.



Fig. 37. *Pothos brevistylus*. a, fertile shoot; b, spadix detail; c, fertile shoot, mature stage of infructescence: a-b, Hose 582; c, Beaman 8463. Scale bar: a, c = 2 cm; b = 3.3 mm.

Pothos hosei Rendle, J. Bot. 39 (1901) 178; Engl. in Engl., Pflanzenr. 21 (IV.23B) (1905) 38; Merr., J. Straits Branch Roy. Asiat. Soc., special ed. (1921) 87. — Type: Malaysia, Sarawak, 5th Div., Baram, Marudi, Apr 1895, *Hose* 582 (BM, holo; iso K).

Slender to somewhat robust, heterophyllous (?), root-climbing liane. *Shoot system* only weakly differentiated into flowering and non-flowering branches; cocaul and seedling not observed. *Leaves* mid-green adaxially, slightly paler abaxially, stiffly chartaceous, drying greyish green; petiole 2.5–12 × 0.3–0.4 cm, often rather stout, prominently geniculate apically, sheath extending to below the geniculum and briefly ligulate apically, clasping basally, prominent, later degrading into feeble fibres; blade 14–26 × 4–11.5 cm, narrowly to rather broadly oblong-ovate to oblong-elliptic, slightly oblique, occasionally falcate, base obtuse, rarely weakly cordate in largest examples, apex short-attenuate, minutely apiculate; primary lateral veins arising at 60–85°, intramarginal veins 2 per side, the outer intramarginal vein remaining very close and parallel to margin. *Inflorescence* solitary to few together, usually subtended by cataphylls on condensed short shoots arising from below the axils of distal leaves, occasionally from such shoots arising (persisting?) on leafless older stems, much more rarely terminal on leafy shoots, erect; peduncle 2.5–4 × 0.1–0.15 cm, erect, yellow-green. *Spathe* 1.5–4 × 0.25–1.4 cm, lorate to lorate-triangular, reflexed, not persisting into fruiting, base rounded and obliquely inserted on peduncle, apex acute, apiculate, yellow-green, very thinly leathery. *Spadix* stipitate; stipe 3–4 mm long; fertile portion 1.8–6 × 0.4–0.5 cm, cylindrical, yellow. *Flowers* c. 1.3 mm diam., with 6 free tepals and 6 stamens. *Inflorescence* with numerous berries; fruits 7–10 × 4–7 mm, ellipsoid with a long slender persistent style, ripening red; seeds not observed. — Fig. 37.

Distribution — *Malesia*: endemic to North Borneo.

Habitat — Lowland forest on shale, slopes and ridges, rarely in peat swamp, 20–80 m altitude.

Notes — Immediately recognizable by the longer slender persistent styles that give the spadix a bristly appearance and the greatly exerted stamens drying white against the almost black spadix. The reflexed narrow spathe resembles that of *P. longivagiuatus* and *P. barberianus* but differs in the much thinner texture.

The type of *P. hosei*, while notable for the very broadly ovate-elliptic leaves, is in inflorescence characters, especially the long style, an almost exact match for the type of *P. brevistylus*.

Other specimens examined: BORNEO: BRUNEI DARUSSALAM: Temburong, Selapon, lower slopes of Bk. Beliton, S of village, *J. Drausfield* 6944 (BRUN, K); Belait, Labi, Jalan Melayan, *J. Drausfield* 7269 (BRUN, K). SARAWAK: 3rd Div., Gaat (Gat), upper Rejang River, *Clemens & Clemens* 21936 (A, K); 1st Div., Kuching, *Havilaud* 971 (SING); 2nd Division, Baram Distr., *Hewitt s.n.* (SING). SABAH: Beaufort, Klias F.R., *Devol & Karim* SAN 77798 (K, KEP, L, SAN, SAR, SING).

31. *Pothos laurifolius* P.C. Boyce & A. Hay, sp. nov.

Pothos brevistylum accedit sed ab eo foliis subtus glaucis, stigmatibus sessilibus, spathe ovata coriacea purpurea persistenti, atque in synflorescentiis elongatis aphyllis florenti differt. Folia dorso glauca adhuc in hoc genere unica sunt. — Type: Brunei Darussalam, Belait, Labi, valley of Sg. Rampayoh, 12 Mar 1993, *S. Drausfield* 1282 (K, holo; iso BRUN).

Rather slender, heterophyllous(?), root-climbing liane. *Shoot system* differentiated into free lateral flowering and adherent non-flowering branches; cocaul and seedling not observed. *Leaves* mid- to deep green, paler to sub-glaucous abaxially, stiffly chartaceous, drying greyish green with a whitish abaxial caste; petiole 7–7 × 0.3–0.4 cm,



Fig. 38. *Pothos laurifolius*. a, fertile shoot in flower; b, spadix detail; c, fertile shoot, inflorescence and mature stages of infructescence; d, adherent mature shoot detail: a-b & d, S. Dransfield 1282; c, Nengkat 248. Scale bar: a, c, d = 2 cm; b = 3.3 mm.



Fig. 39. *Pothos laurifolius*. a, fertile shoot; b, inflorescence; c, whole flower, front three quarter view; d, whole flower, side three quarter view; e, inflorescence branching system, mature infructescence; f, sterile shoot: a-d & f, S. Dransfield 1282; e, Nengkat 248. Scale bar: a, f = 2 cm; b = 3.3 mm; e = 1 cm; c, d = 1.3 mm.

rather stout, clasping stem expect for prominent apical geniculum sheath prominent, extending to base of geniculum, clasping basally, ligulate apically; blade 17–20 × 6–8.2 cm, ovate to elliptic, base subacute to obtuse, apex attenuate-mucronate, minutely apiculate; primary lateral veins arising at almost 90°, intramarginal veins 2 per side, the outer intramarginal vein remaining very close and parallel to margin, inner intramarginal vein c. 10–15 mm distant from margin. *Inflorescences* erect, subtended by cataphylls, several in sequence on elongated shoots arising from below the axils of distal leaves; peduncle 1–1.5 × 0.2–0.3 cm, stout, erect, dark purple-green. *Spathe* 1.72 × 0.7–1 cm, ovate-lorate, spreading to reflexed, base minutely cochleate on the peduncle, apex acute, apiculate, dark purple, stiffly glossy-leathery. *Spadix* sessile, 2–2.5 × 0.3 cm, cylindrical, white. *Flowers* c. 1.3 mm diam., with 6 free tepals and 6 stamens. *Infructescence* with few berries; fruits c. 10 × 7 mm, ovoid-ellipsoid, ripening red; seeds not observed. — Fig. 38, 39.

Distribution — *Malesia*: endemic to Borneo (Brunei Darussalam; known only from Labi district).

Habitat — Primary lowland alluvial forest on sedimentaries, 40 m altitude (only recorded from one specimen).

Note — Approaches *P. brevistylus* but differs by glaucous-backed leaves (recalling many Lauraceae — hence the epithet), sessile stigma, persistent ovate leathery, purple spathe and in flowering on elongated, foliage-leafless synflorescences. The glaucous-backed leaves are hitherto unique in the genus.

Other specimen seen: BORNEO: BRUNEI DARUSSALAM: Belait, Labi, Kg. Teraja, path to Sarawak border, *Nengkat 248* (BRUN, K).

32. *Pothos brassii* B.L. Burt

Pothos brassii B.L. Burt, Kew Bull. (1936) 495; Jones & Gray, Climbing Pl. Austr. (1988) 312. Hay, Blumea 40 (1995) 405–405, fig.1. — Type: Australia, Queensland, slopes of Thornton Peak, 15 Mar 1932, *Brass 2311* (K, holo; iso A, BRI, MO).

Slender, not highly ramified, hemi-epiphytic rainforest and gallery forest root-climbing liane. *Shoot system* poorly differentiated into non-flowering adherent and flowering branches, the branchlets having the leaves arranged very obviously in two ranks; eocaul thread-like, with a series of gradually larger leaves; seedlings succeeding gradually to adult leaf form. *Leaves* drying greyish-green; petiole shorter than the blade, sheathing for most of its length, with the sheath usually not quite reaching the geniculum; wings of sheath more or less persistent, eventually becoming fibrous; blade c. 12 × 5 cm, elliptic, slightly to distinctly falcate, the midrib impressed above, base acute to obtuse, minutely auriculate; primary lateral veins diverging at c. 60–80°, subparallel, running into an intramarginal vein c. 8 mm from the margin and a submarginal vein c. 3 mm from the margin. *Inflorescence* solitary or paired, terminal on leafy ultimate branchlets; peduncle exceeding the petiole of the subtending leaf, green (drying black), with c. 4 short cataphylls at its base (from the axil of one of which the second inflorescence may arise) usually hidden in the leaf sheath, or the first inflorescence without cataphylls and the second arising (with a minute prophyll and short cataphylls) in the axil of the subtending leaf. *Spathe* c. 2 cm long, broadly ovate, reflexed, base of the spathe margins somewhat decurrent (c. 3 mm) on the peduncle, tip mucronate for c. 3 mm, green. *Spadix* sessile, c. 2 cm long, oblong-ovoid, ivory-white; flowers c. 1.7 mm diam., with 6 free tepals and 6 stamens, with the anthers fully exerted from the tepals at and after anthesis. *Infructescence* with 1–few berries; fruit c. 1.3 cm long, ovoid, orange to orange-red when ripe; seeds not observed. — Fig. 40.

Distribution — Australia (endemic to wet tropical eastern Queensland; locally common between Daintree and Bellenden Ker).



Fig. 40. *Pothos brassii*. **a**, fertile shoot; **b**, spadix detail; **c**, fertile shoot, mature stage of infructescence: a-b, Brass 2311; c, Brass & White 278. Scale bar: a, c = 2 cm; b = 2.7 mm.

Habitat — In rainforests from the lowlands to c. 1200 m altitude.

Other specimens examined: AUSTRALIA: Queensland, Daintree River, *Brass & White 278* (A, BRI, K, LAE); Queensland, Daintree River, *Flecker 7071* (BRI, QRS); Queensland, Cape Tribulation N.P., *Hay 7053* (NSW); Queensland, McDowell Range, *Hyland 3792* (BRI, QRS); Queensland, E slope of Bellenden Ker, *Hyland 5351* (BRI, QRS); Queensland, VCL Noah, *Hyland 8287* (BRI, L, LAE, QRS); Queensland, between McDowell Range and Bloomfield, Gold Hill near China camp, *Tracy 14800* (BRI, QRS); Queensland, McDowell Range between Daintree River and Bloomfield River, *Webb & Tracey 10855* (A, BRI, CANB, K, L).

33. *Pothos insignis* Engl.

Pothos insignis Engl. Bull. Soc. Tosc.ortic. 4 (1879) 267 & Bot. Jahrb. Syst. 1 (1881) 180 & in Beccari, Malesia 1 (1883) ('1882') 263, t.17 & in Engl., Pflanzenr. 21(IV.23B) (1905) 39–40; Ridl., J. Straits Branch Roy. Asiat. Soc. 44 (1905) 188; Merr., J. Straits Branch Roy. Asiat. Soc., special ed. (1921) (1921) 87; Boyce & Poulsen, Kew Bull. 49 (1994) 523–528. — Type: Malaysia, Sarawak, 1st Div., Matang, *Beccari P.B. 953* (FI, holo; iso K, L).

Pothos borneensis Furtado, Gard. Bull. Sing. 8: 148 (1935), *syn. nov.* — Type: Malaysia, Sarawak, 5th Div., Limbang, Jul 1905, *Hewitt s.n.* (SING, holo; iso K).

[*Pothos basilauensis* Furtado, nom. nud. in sched. BM].

Slender to rather robust, homeophyllous(?), root-climbing liane to 10 m. *Shoot system* very strongly differentiated into adherent non-flowering and flowering shoots, the latter completely and densely clothed by inflated, 7–10 × 1.5–2 cm, overlapping cataphylls; eocaul and seedling not observed. *Leaves* pale to mid-green adaxially, very slightly paler abaxially; petiole 11–24 cm × 3–6.6 mm, slender, strongly channelled, geniculate apically; blade (7–)0.5–34 × (2.5)5–15 cm, lanceolate-elliptic, strongly oblique, base minutely cordate, apex attenuate with a 2–2.5 mm apiculum; primary lateral veins numerous, arising at 35–45°, intramarginal veins 3 per side, very prominent, the innermost c. 1/3 distant from margin to midrib. *Inflorescences* few to many together, produced sequentially, each subtended by a robust inflated cataphyll; peduncle 5 cm × 2–3 mm, greenish purple. *Spathes* 4.5–7.5 × 1.5–3.5 cm, ovate-elliptic, reflexing at anthesis, base decurrent, apex acuminate, mid-green with a broad purple mark centrally and some purple staining apically. *Spadix* stipitate; stipe 4–6 × 1.5–2 mm, decurrent into spathe limb, purple; fertile portion 4.2–9 × 0.6–1.3 cm, cream. *Flowers* c. 2.3 mm diam.; tepals 6, free; stamens 6. *Inflorescence* with numerous berries, spathe persistent into fruiting, becoming chartaceous, tepals much increased in size, up to 7 × 2.5 mm, apparently functioning as protection for developing berries, filament remains abundant, chartaceous; fruit 5–10 × 2–3.5 mm, ellipsoid, flattened basally, turbinate apically, young berries dark purple, tinged white, ripe berries white with purplish styler region, musty fruit-scented; seeds c. 2 × 3 mm, ovoid, greyish brown. — Fig. 41.

Distribution — *Malesia*: Borneo, Philippines (Palawan).

Habitat — Lianescent, hemi-epiphytic or lithophytic trunk or treelet climber at base of ridges or near rivers in primary to disturbed primary mixed dipterocarp forest on shales or limestone, at 10–1200 m altitude.

Note — It is not readily apparent to what *P. insignis* is related. While somewhat resembling *P. tener*, it is readily distinguished by the clinging flowering shoots and the fruits ripening to white and notably musty fruit-smelling, the latter suggesting mammal (fruit-bat?) dispersal.

Other specimens examined: BORNEO: SARAWAK: 1st Div., Bau, Seburan *Anderson S 26848* (SAR, US); 4th Div., Miri, G. Subis, Niah Caves, outside Great Cave, *Anderson S 31901* (SAR); 4th Div., Miri, Niah Caves, S side of G. Subis, Sekaloh River, *Anderson et al. S 27551* (SAR, US); 1st Div., Bau, Fairy Caves, c. 7 km from Bau, *Boyce 796* (K, M, SAR); 2nd Div., Lubok Antu, *Brooke 10699* (BM,

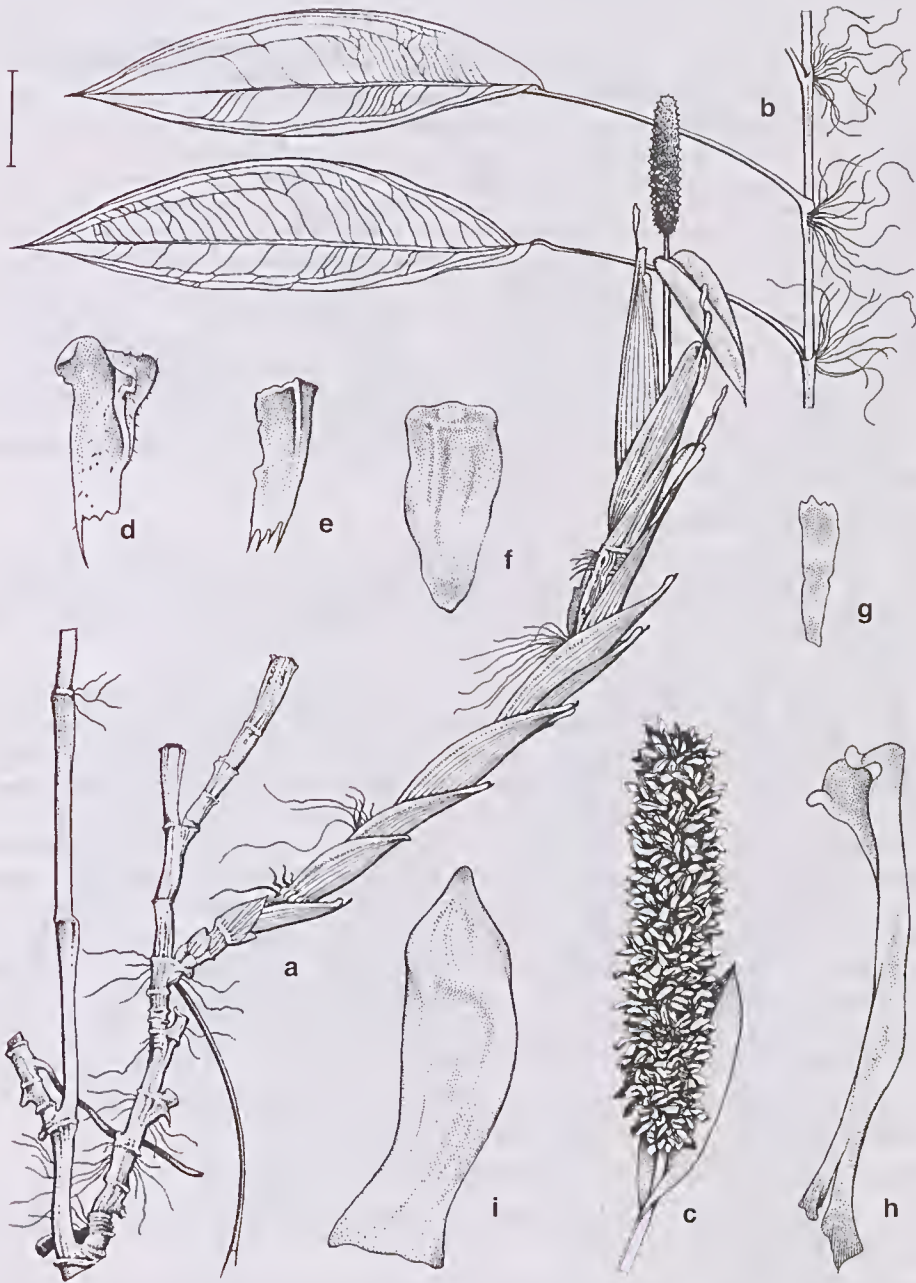


Fig. 41. *Pothos insignis*. a, fertile shoot; b, adherent sterile adult shoot; c, inflorescence; d, tepal, inside three quarter view; e, tepal, outside three quarter view; f, ovary; g, stamen filament; h, tepal from infructescence, inside three quarter view; i, semimature berry: a-i, Poulsen 183. Scale bar: a = 4 cm; b = 6 cm; c = 3 cm; d-h = 2 mm; i = 3 mm.

US); 1st Div., Bidi, *Brooks s.n.* (SING); 1st Div., along road between Kuching and Padawan, 10 miles SW of main Kuching-Serian highway, *Croat 53184* (MO); 2nd Div., Baram Distr., Tutoh, Paku, Long Melinau, Bk. Kala, near Melinau River, *Ludong S 31842* (K, L, NSW, SAR); 1st Div., Teng Bukap, 32nd mile Padawan road, *Mamit S 32655* (K, L, SAR); 1st Div., 1 mile W of Bau, *Nicolson 1290* (US); 4th Div., near Long Kapa, Mt Dulit, Ulu Tinjar, *Richards 1452* (K); 1st Div., Bau, *Ridley s.n.* (SING); 1st Div., Bau, *Ridley s.n.* (SING). BRUNEI DARUSSALAM: Temburong, Sg. Belalong at Kuala Belalong, Bt. Apoi F.R., Kuala Belalong Field Studies Centre, Webber Booth's Plot, *Poulsen 183* (AAU, BRUN, K). SABAH: Lahad Datu, Bk. Tempadong, cliffs and hills along Sg. Segama, *Beaman 10089* (MSC, UKMS, US); Dallas, *Clemens & Clemens 261542* (BM); Dallas, *Clemens & Clemens 26542* (BM, SING); Sapulut, base of Bt. Punggul, *Kulip & Kantil SAN 133565* (SAN); Sandakan, mile 30, Ulu Dusun, *Lantoh SAN 87859* (KEP, SAN, SAR); Sandakan, Gomantong F.R., Dulong Lambu limestone massif, Gomantong limestone hill, *Lim et al. 584* (NSW, SAN); Keningau, Lian Cave, *Meijer & Kuripin SAN 51712* (K, SAN). KALIMANTAN: W Kalimantan, G. Bentuang area, 5-10 km N of Masa village, 150 km NE of Pontianak, beside Sembawang River, *Burley et al. 2350* (A, BO, K); S Kalimantan, Djaro Dam, Muara Uja, *J. Dransfield & Saerudin 2164* (BO); CE Kalimantan, W Koetai, no.5 near Lahoem, *Endert 1761* (BO, K); C Kalimantan, Kab. Kotawaringin Timur, Sg. Mentaya, Sangai, 100 m from pondok on new road, *Wilkie 9540* (A, E). PHILIPPINES: Palawan, Bualbualan, *Alcacid PNH 6043* (A); Palawan, Chromite Mine site, *S. Dransfield & Madulid 1048* (K); Palawan, Basilan, *Reillo BS 15435* (BM, K, US); Palawan, Penigisan, *Olsen 355* (C); Palawan, Irawan River valley, base of Mt Beaufort at Tatanarom, *Soejarto & Madulid 6117* (A); Palawan, Singnapan Ransang, *Vendivil & Juan PNH 126215* (UKMB, PNH).

34. *Pothos cuspidatus* Alderw.

Pothos cuspidatus Alderw., Bull. Jard. Bot. Buitenzorg III, 4 (1922) 337; K. Krause & Alderw., Nova Guinea 14 (1927) 211; Hay, Blumea 40 (1995) 407, fig.2. — Type: Papua Barat, Jayapura Prov., Doorman summit, 8 Oct 1920, *Lam 1566* (BO, holo, photo BRI, LAE; iso L).

Very slender, highly ramified climber or hemi-epiphyte, the branchlets having the leaves interspersed with a greater number of cataphylls. *Shoot system* architecture unclear; eocaul and seedling not observed. *Leaves* drying dull dark green; petiole slender, to 2.5 cm long, c. ¼ the length of the blade, very narrowly sheathing to the geniculum; blade highly variable in size on a branch, c. 6–12.5 cm × 1.5–4 cm (sometimes much smaller on ultimate branchlets), ovate-lanceolate to lanceolate, rather abruptly acuminate into prolonged 'drip tips', base acute to somewhat obtuse; primary lateral veins diverging at 45–75°, intramarginal veins one on each side of the midrib, submarginal. *Inflorescence* solitary, terminal on ultimate leafy branches but subtended by one or more narrow cataphylls to 1.7 cm long; peduncle 1–2 cm long, very slender. *Spathe* c. 3 cm × 4 mm, ovate, subulate. *Spadix* sessile, 1 cm × c. 3 mm, oblong. *Flowers* c. 1.6 mm diam., with 6 free tepals and 6 stamens. *Infructescence* with 2–5 berries; fruit 1–1.2 cm × c. 5 mm, elongate-obovoid; seeds not observed. — Fig. 42.

Distribution — *Malesia*: endemic to western New Guinea (known only from northern Papua Barat in the Taritatau (Idenburgh) River area).

Habitat — Mossy lower montane in forest, 1420–1800 m altitude.

Note — Close to *P. polystachyus* but differing in the smaller, wider spathe and the more elaborated inflorescence shoots.

Other specimen seen: NEW GUINEA: PAPUA BARAT: Jayapura Prov., Taritatau ('Idenburgh') River, Bernhard Camp, *Brass 12100* (A, L).

35. *Pothos polystachyus* Engl. & K. Krause

Pothos polystachyus Engl. & K. Krause, Bot. Jahrb. Syst. 54 (1917) 76, fig. 2; Hay, Blumea 40 (1995) 405–407. — Type: Papua New Guinea, W Sepik Prov., Sepik River, Station Felsspitze, 7 Aug 1913, *Ledermann 12696* (B, holo).

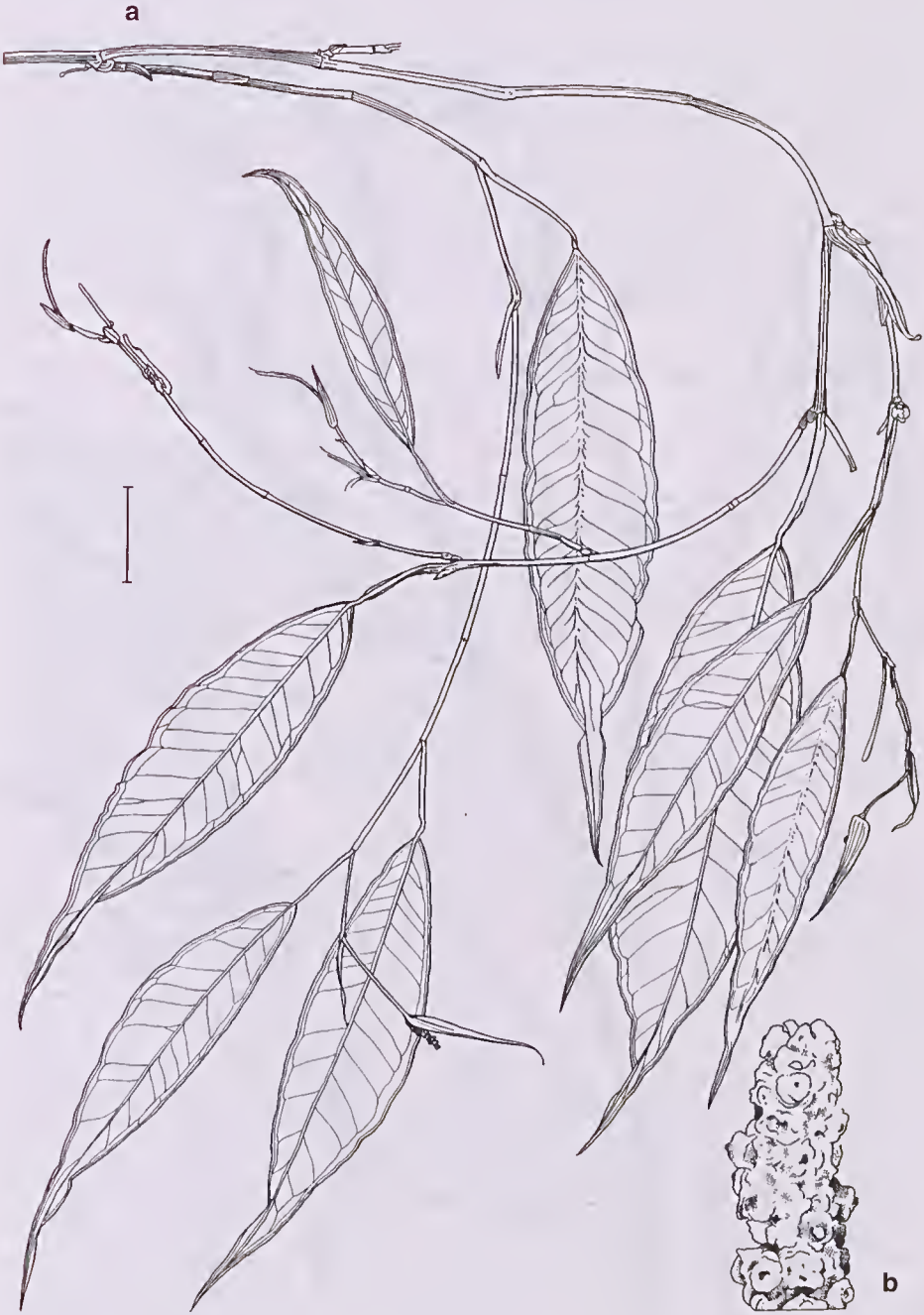


Fig. 42. *Pothos cuspidatus*. a, fertile shoots; b, spadix detail: a-b, Brass 12100. Scale bar: a = 2 cm; b = 1.7 mm.



Fig. 43. *Pothos polystachyus*. a, fertile shoot; b, fertile shoot, mature stage of infructescence; c, infructescence: a-c, *Ledermann 12696*. Scale bar: a, b = 1.5 cm; c = 7 mm.

Tall, slender root-climbing liane or hemi-epiphyte. *Shoot system* architecture unknown. *Leaves* with the petiole 2–5 cm long, prominently geniculate at the apex, sheathing for most of its length, sheath persistent; blade c. 12–16 × 2–4 cm, lanceolate, somewhat oblong and falcate, rather stiff, tip acuminate, base acute; primary lateral veins diverging at c. 30–60°, intramarginal veins one on each side of the midrib, submarginal. *Inflorescence* a lax, compound, much-ramified, sympodial synflorescence, the modules consisting of a prophyll, 3 or 4 cataphylls, a terminal inflorescence and a relay bud in the axil of the last cataphyll — the lower cataphylls sometimes with similar modules in their axils; synflorescence cataphylls lanceolate, 6–12 mm long; peduncle c. 2–4 cm long, very slender, subtended by a cataphyll almost as long. *Spathe* 3.5–4 cm long, ovate-lanceolate, acuminate, about twice the length of the spadix. *Spadix* sessile, to c. 2 cm × c. 3 mm, cylindrical; flowers c. 1.6 mm diam., with 6 free tepals and 6 stamens. *Infructescence* with 4–6 berries; fruit globose, c. 5 mm diam. — Fig. 43.

Distribution — *Malesia*: endemic to New Guinea (Papua New Guinea, West Sepik Province; known only from the type collection).

Habitat — Lower montane rainforest, c. 1400 m altitude.

Notes — This species is evidently closely related to *P. cuspidatus* (q.v.), differing in the less markedly cuspidate leaf and spathe, the somewhat longer spadix, the smaller globose fruit and in the much-ramified synflorescence.

The illustration cited above shows a rather more highly ramified synflorescence than that in the type specimen. Possibly there was a second sheet that did not survive the wartime damage to Berlin.

36. *Pothos falcifolius* Engl. & K. Krause

Pothos falcifolius Engl. & K. Krause, Bot. Jahrb. Syst. 54 (1917) 76; Hay, Blumea 40 (1995) 407–408, fig.3. — Type: Papua New Guinea, E Sepik Prov., Hunsteinspitze, 3 Mar 1913, Ledermann 11309 (B, holo).

Moderately robust hemi-epiphytic root-climbing liane often with root-thorns at the nodes. *Shoot system* architecture unclear; eocaul and seedling not observed. *Leaves* rather stiffly chartaceous, mid- to dark green abaxially and adaxially; petiole 2.5–9 cm long, sheathing up to or just short of the geniculum, sheath persistent; blade 10–28 × 2–11 cm, ovate to elliptic to elliptic-lanceolate, somewhat falcate when narrow, tip acute to gradually or abruptly acuminate, base acute to obtuse to somewhat auriculate, midrib clearly off-centre, prominent abaxially, flush or impressed adaxially; primary lateral veins diverging at 45–85°, intramarginal veins 1 or 2, continuing more or less the length of the blade from the base or running to the margin and replaced by another about midway up the blade. *Inflorescence* solitary and terminal on free leafy shoots or on sympodial, leafless, cataphyll-bearing, simple branch systems borne among the leaves (initially?) to (later?) complex perennial(?) branch systems borne on older parts of the stem. *Spathe* c. 2.3–7 cm long, oblong-lanceolate, deflexed, usually persisting into fruit, white. *Spadix* stipitate; stipe 2–3 mm long; fertile portion 2–4 cm × c. 2 mm diam. (up to c. 6 cm × c. 7–8 mm diam. when fruiting), markedly distally tapering. *Flowers* c. 1 mm diam, somewhat distant, sunk in pits in the spadix, tepals 4, united into an operculum with a central pore over the floral pit, stamens 4, the anthers at the mouth of the perianth at anthesis. *Infructescence* with many fruits, fruiting perianth c. 4–5 mm diam, spreading, with the margins split into irregular segments, forming a cupule beneath the berry; fruit 1–2 cm long, ovoid to subcylindric, ripening yellow through orange to dark red with watery pulp; seeds c. 9 × 3 mm, 1 or 2 per fruit, dark brown. — Fig. 44.



Fig. 44. *Pothos falcifolius*. a, fertile shoot with inflorescence and mature infructescence; b, whole spadix; c, spadix detail; d, adherent mature shoot detail; a, Ledermann 11309; b–c, Foreman & Katik NGF 48482; d, Frodin NGF 32077. Scale bar: a, d = 2 cm; b, c = 2.7 mm.

Distribution — *Malesia*: Maluku and widespread in western parts of New Guinea.

Habitat — Forested areas from the lowlands to mid-montane rainforest up to c. 2200 m alt.

Notes — Apparently a rather widespread and variable but under-collected species. The sunken flower with four stamens and the perianth united into an operculum, markedly asymmetric leaf blades and the spines formed at the nodes from adventitious roots are distinctive. The latter character is otherwise known only in *Pothos armatus* C.F.C. Fischer (NW India).

Other specimens examined: MALUKU: P. Morotai, Totodoku, *Kostermans* 782 (BO, K); P. Morotai, G. Pare-Pare, *Kostermans* 1092 (A, BO, SING). NEW GUINEA: PAPUA BARAT: Biak, Yapen Is., Sumberbaba, near Serui, *Act & Idjan* 841 (BO, L); ?Jayapura Prov., *Atasrip* 238 (BO); Jayapura Prov., Taritatau (Idenburgh) River, 6 km SW of Bernhard Camp, *Brass* 13030 (A, L); Cenderawasih Prov., Wandammen Peninsula, Wondiwoi Mts, *BW* 13337 (L), *BW* 13634 (L), *BW* 13717 (L); Kepala Burung Prov., Sorong, Remoe, *Main* 443 (L); Mimika Prov., Freeport Concession Area, in front of Golf Club towards access road, *Ulteridge* 311 (BO, K, MAN); Kepala Burung Prov., Tohkiri Mts, Aifat River valley, *van Royen & Sleumer* 7245 (L). PAPUA NEW GUINEA: Western Prov., Kiunga, T'mingondok, 6 miles ENE of Kiunga, *Foreman & Katik* NGF 48482 (A, BO, BRI, CANB, K, L, LAE, NSW, SING, US); Southern Highlands Prov., Tari, vicinity of Habono rest house, 6 1/2 miles W of Mt Ne, *Frodin* NGF 32077 (L, LAE, US); E Sepik Prov., Wagu, Ambunti, *Hoogland & Craven* 10354 (K, L); Gulf Prov., Mt Bosavi, N side, *Jacobs* 8779 (L); W Sepik Prov., Amanab, Imonda Patrol Post, *LAE* 52888 (L, LAE); Madang Prov., Crater Mt, *Mack* 509 (NSW); E Sepik Prov., Hunstein Range, ridge between Wagu and Bani, *Takeuchi* 5419 (BISH, K).

'*Goniurus* Supergroup'

37. *Pothos beccarianus* Engl.

Pothos beccarianus Engl. in A. & C. D.C., Monogr. Phan. 2 (1879) 92 & in Engl., Pflanzenr. 21(IV.23B) (1905) 44, fig.17; Ridl., J. Straits Branch Roy. Asiat. Soc. 44 (1905) 187; Merr., J. Straits Branch Roy. Asiat. Soc., special ed. (1921) 86. — Type: Malaysia, Sarawak, 1st Div., Matang, May 1869, *Beccari* p.b. 1699 (FI, holo; iso B, K, P).

Slender, heterophyllous, root-climbing liane. *Shoot system* architecture unclear; cocaul thread-like, with scattered minute bracts, then abruptly becoming shingling; seedling shingle-leaved, then abruptly producing adult leaves; flowering shoot much abbreviated, (foliage) leafless. *Leaves* coriaceous, deep-green, paler abaxially, drying mid-green to brown; petiole 1.5–4 × 0.1–0.2 cm, rather stout, apex prominently geniculate, sheath mostly indistinct, occasionally spreading and apically ligulate in very large leaves; blade 4–26 × 1.5–6 cm, narrowly oblong elliptic to narrowly elliptic, very occasionally slightly unequal and falcate, apex acuminate to long-acuminate, apiculate, apicule later deciduous, base acute to obtuse; primary lateral veins arising at 70–80°, 2 intramarginal veins per side, 2–10 mm from blade margin, arising from just above base of the midrib, remaining ± parallel to margin, terminating at the tip of the blade. *Inflorescences* several at different stages on a reiterating flowering shoot; peduncle 1–2.5 × c. 0.1 cm, slender, strongly curving or straight, the inflorescence held erect, purple-green. *Spathe* 0.8–1.5 × c. 0.6 cm, ovate, base rounded, annularly inserted on to peduncle, apex acuminate, reddish pink. *Spadix* stipitate; stipe 5–20 × 0.5–0.8 mm, terete, pubescent, yellow to dark pink; fertile portion 3–8 × 0.2–0.3 cm, very slender-cylindric, pubescent, straight to markedly zig-zagging (even on same synflorescence), yellow to dark pink. *Flowers* c. 1.8 mm diam., widely scattered, arranged in a lax spiral along the spadix with 6 free tepals and 6 stamens. *Infructescence* with few berries; fruit 8–9 × 4–5 mm, oblong-ellipsoid; seeds not observed. — Fig. 45.

Distribution — *Malesia*: endemic to Borneo (not yet recorded from Kalimantan).



Fig. 45. *Pothos beccarianus*. a, b, fertile shoots; c, spadix detail; d, whole flower, top view; e, adherent branching system, detail; f, juvenile shingle plant: a: *Ava & P.C. Yii S 46634*; b-d, *Fidilis SAN 118616*; e, *Poulsen & Eri 174*; f, *Burbidge s.n.* Scale bar: a, b, f = 2 cm; c = 2 mm; d = 1 mm; e = 2.7 cm.

Habitat — Primary to variously disturbed lowland to hill forest, on slopes and ridgetops, very occasionally in kerangas, 135–820 m altitude.

Notes — One of three 'goniurid' *Pothos* endemic to Borneo, *P. beccarianus* is notable for the frequently long, pubescent inflorescences with the flowers set directly on the spadix axis and not (as is the case in *P. molleyanus*) on a swollen pad.

As with many other *Pothos*, *P. beccarianus* displays a marked degree of size-related variability. In particular the development of the inflorescence seems closely linked to the vigour of the plant or even of an individual branch, with as much as 300% size difference between inflorescences of comparable age on different duplicates of the same collection.

There are two colour forms of *P. beccarianus*. The commoner form has yellow inflorescences, the rarer dark pink.

Other specimens examined: BORNEO: SARAWAK: 4th Div., Dulit range, *Awa & P.C. Yii S 46634* (K, KEP, L, SAN, SAR, US); 'Native collector' *BS 2176* (K); 4th Div., Mulu N.P., slopes of G. Mulu, above camp 2, *Primack S 42411* (A, K, KEP, L, SAN, SAR); 5th Div., Limbang, Ulu Sg. Medamit, *Wright & Isnawi S 32296* (BO, K, L, SAN, SAR, SING, US); 4th Div., Niah N.P., Sg. Sekaloh, *P.C. Yii S 40139* (B, K, KEP, L, MO, SAN, SAR); 1st Div., 17th mile Bau - Lundu road, G. Raya, *P.C. Yii & Jegong S 45988* (K, KEP, L, SAN, SAR, US). BRUNEI DARUSSALAM: Temburong, Sg. Temburong at Kuala Belalong, ridge W of River, *Boyce 445* (BRUN, K); Temburong, Amo, Bk Belalong, *J. Drausfield 7169* (BRUN, K). Temburong, Batu Apoi F.R., ridge W of Kuala Belalong Field Studies Center slope, *Poulsen & Eri 174* (AAU, BRUN, K). SABAH: No further data, *Burbidge s.n.* (A, K); Kinabalu, Sg. Mesilau, *Chew & Corner RSNB 4977* (A, K, LE, SING, US); Nabawan, *Fidilis S 118616* (K, SAN); Keningau, Tulid area, Ulu Sg. Sembauan, *Fidilis SAN 125636* (K, SAN); Keningau, Pisang, *Fidilis SAN 128252* (K, KEP, SAN); Keningau, Pensiangan F.R., *Jimpin SAN 110325* (K, KEP, L, SAN, SAR); Keningau, Ulu Sg. Matud, *Jimpin SAN 119408* (K, SAN); Tenom, Mandalom F.R., Sg. Puntii, *Mantor SAN 120314* (K, SAN); Tongod, Pinangah F.R., *Tuyuk & Hassan SAN 117169* (K, KEP, SAN).

38. *Pothos curtisii* Hook.f.

Pothos curtisii Hook.f., Fl. Brit. Ind. 6 (1893) 554; Engl. in Engl., Pflanzenr. 21 (IV.23B) (1905) 43; Boyce, *Blumea* 45 (2000) 186–189, fig.10. — Type: Malaysia, Perak, Larut, *Kunstler* ('Dr King's collector') 3887 (K, lecto; isolecto CAL, SING, selected by Boyce (2000: 186)).

Pothos peninsularis Alderw., Bull. Jard. Bot. Buitenzorg III, 1 (1920) 381. — *Pothos latifolius* Hook.f., Fl. Brit. Ind. 6 (1893) 554; Engl. in Engl., Pflanzenr. 21 (IV.23B) (1905) 42, nom. illeg., non *Pothos latifolius* L. (1759) (Maluku). — Type: Malaysia, Perak, Larut, *Kunstler* ('Dr King's collector') 3903 (K, lecto, isolecto CAL, SING, selected by Boyce (2000: 187)).

Pothos kunstleri Hook.f., Fl. Brit. Ind. 6 (1893) 554; Engl. in Engl., Pflanzenr. 21 (IV.23B) (1905) 42. — Type: Malaysia, Perak, Larut, *Kunstler* ('Dr King's collector') 2754 (K, lecto, selected by Boyce (2000: 187)).

Pothos maingayi Hook.f., Fl. Brit. Ind. 6 (1893) 554; Engl. in Engl., Pflanzenr. 21 (IV.23B) (1905) 43. — Type: Malaysia, Malacca, 1867–1868, *Maingay 1538* (K, lecto, selected by Boyce (2000: 187)).

Slender, heterophyllous, root-climbing liane to 3 m. *Shoot system* architecture unclear; eocaul not observed; seedling shingle-leaved; flowering shoot much abbreviated to rarely rather elongated through reiteration, (foliage) leafless or, occasionally, bearing undersize foliage leaves. *Leaves* mid-green, paler abaxially, drying mid-green to brown, stiffly coriaceous; petiole 2–10.5 × 0.1–0.6 cm, slender, canaliculate, rounded abaxially, base decurrent, apex prominently geniculate, sheath distinct, prominent, erect, apically ligulate in young growth, ligule later disintegrating; blade 8–26 × 1.6–9.5 cm,



Fig. 46. *Pothos curtisii*. **a**, juvenile/mature sterile transition shoot; **b**, shingle leaf; **c**, mature sterile lamina venation detail midrib and intermarginal vein; **d**, venation detail; **e**, fertile shoot; **f**, inflorescence; **g**, spathe detail: **a-g**, *Boyce 1094*. Scale bars: **a** = 10 cm; **b** = 1 cm; **c** = 1 cm; **d** = 5 mm; **e** = 8 cm; **f** = 2 cm; **g** = 1 mm.

broadly to narrowly oblong elliptic, apex acuminate to long-acuminate, apiculate, apicule later deciduous, base obtuse; primary lateral veins arising at 45–70°, 2 intramarginal veins per side, 2–13 mm from blade margin, arising from just above base of the midrib, remaining \pm parallel to margin, terminating at the tip of the blade. *Inflorescence* solitary to several at different stages on a reiterating flowering shoot; peduncle 2.5–6.5 \times 0.1–0.4 cm, somewhat robust, strongly curving or straight, the inflorescence held erect, mid-green. *Spathe* 3.4–6.7 \times c. 1 cm, linear-triangular to narrowly oblong, base rounded, annularly inserted on to peduncle, apex acuminate, slightly rough, pale brown tinged reddish pink. *Spadix* stipitate; stipe 3–19 \times 1–2 mm, terete; fertile portion 3.5–13.5 \times 0.5–0.3 cm, very slender-cylindric, occasionally sterile at the tip, pale greyish pink, older inflorescences blackish red. *Flowers* c. 1.6 mm diam., widely scattered, arranged in a lax spiral along the spadix with 6 free tepals and 6 stamens. *Infructescence* with few to many berries; fruit 6–11 \times 5–7 mm, ellipsoid to oblong-ellipsoid; seeds not observed. — Fig. 46.

Distribution — Thailand (Narathiwat). In *Malesia*: Sumatera (Sumatera Utara and Jambi provinces), Peninsular Malaysia, Singapore.

Habitat — Wet upper hill, hill and lowland primary to secondary evergreen forest, on a variety of substrates, occasionally on limestone, 60–1200 m altitude.

Notes — Easy to identify in Peninsular Malaysia as it is the only goniurid *Pothos* there. It is very similar to *P. beccarianus* (Borneo) but distinguishable by much longer petioles (up to 10.5 cm vs 4 cm in *P. beccarianus*), prominent petiole sheath, stiffly chartaceous (not coriaceous), leaf blades and roughened (not pubescent) spadix.

For such a distinctive species (the only representative of the remarkable *Goniurus* supergroup in continental SE Asia) *P. curtisii* has a chequered taxonomic history; three of its four synonyms were described on the same page of the Flora of British India. Of these synonyms, Hooker's *P. latifolius* (the name most often applied to *P. curtisii* in herbaria) is illegitimate, being antedated by *P. latifolius* L. (q.v.). Alderwerelt was aware of this and published a new name, *P. peninsularis* (Alderwerelt 1920), for Hooker's *P. latifolius*. However, Alderwerelt apparently had not appreciated that Hooker had described the same species under four different names.

Other specimens examined: PENINSULAR MALAYSIA: Pahang, SW Pahang, W Lesong F.R., near Sg. Jekati, *Almad & Shukor* 527 (A, C, SING); Malacca, *Alvins* 106 (SING); Perak, Matang, Bubu F.R., Compartment 76 *Boyce* 698 (K, KEP); Negeri Sembilan, Pasoh F.R., trail to and environs of new Canopy Walkway, *Boyce* 1094, *Boyce* 1335 (K, KEP); Perak, Trolak F.R., *Chelliah* KEP 104636 (K, KEP, SING); Penang, Bt. Ferringgi, *Curtis* 808 (K, SING); Perak, Taiping *Curtis* 2987 (SING); Kedah, G. Baling, *Furtado s.n.* (SING); Negeri Sembilan, Selaru F.R., *Holtum* 9727 (BO, K, SING); Selangor, Sg. Buloh, R.R.J. Experiment Station, *Kaimal s.n.* (SING); Selangor, Campus forest, U.K. Bangi, *Kasin & Zai* 2994 (UKMB); Terengganu, Jambu Bongkok F.R., Dungun, *Kassim s.n.* (UPM); Perak, Larut, Sunkei ('Sunkei Perak'); *Kunstler* ('Dr King's collector') 3012 (BM, CAL, K, SING); Perak, Larut, *Kunstler* ('Dr King's collector') 4221 (BM, CAL, K); Perak, Waterfalls Hill, *Kunstler* ('Dr Kings' Collector') 4236 (BM, SING); Perak, Taiping (Taiping) Larut, *Kunstler* ('Dr King's collector') 8493 (BM, CAL, K); Malacca, *Maingay* 3041 (K); Terengganu, Jambu Bongkok F.R., Dungun, *Mk. Ar.* 4957 (UKM); Perak, Taiping, along road to Maxwell's Hill Station, *Nicolson* 1070 (SING, US) & 1071 (SING, US); Johore, Ulu Endau, Labis F.R., Compartment 285, *Ogata* KEP 110386 (A, K, KEP, SING); Terengganu, Jambu Bongkok F.R., *Poore* KL 1169 (UPM); Selangor, 15th mile Padang track, *Ridley s.n.* (SING); Perak, Dindings, *Ridley* 7248 (K, SING); Perak, G. Kelidang, *Ridley* 9696 (SING); Perak, Dindings, *Ridley* 10318 (K, SING); Perak, Taiping Hills, *Ridley* 11420 (BM, K, SING), Selangor, Kuala Lumpur, *Ridley's collector s.n.* (SING); Perak, *Scortechini* 624a (K); Perak, probably Larut, *Scortechini* 675 (K); Perak, G. Bujang Melaka, Chenderiang Peak, *Shah et al.* 3367 (C, KEP, MO, SING); Penang, Telok Aling, *Sinclair* SING 39378 (E, K, SING, US). SINGAPORE. Jurong Road, 15th mile, *Corner* SING 26102 (K, SING); Kranji, *Goodenough* 5108 (BM, SING); Kranji, *Lanclasse* 40 (P); Bk. Mandai, *Mat s.n.* (SING);

Bk. Mandai, *Ridley 6535* (SING); Bk. Mandai, *Ridley s.n.* (SING). **SUMATERA:** Sumatera Utara, Kualu (Koealoe), near the Aekanopan (Aek Kanopan), Loendoet concession, *Bartlett 8450* (US); Jambi, Pasir Mayang, P.T. IFA concession, *Vreken-Buijs 70* (BO, L) & *71* (BO, L).

39. *Pothos luzonensis* (C. Presl) Schott

Pothos luzonensis (C. Presl) Schott, Oesterr. Bot. Wochenbl. 5 (1855) 19; Miq., Flora Ned. Indië 3 (1856) 182; Schott, Aroideae (1856–1857) 25, t.56 & Prodr. Syst. Aroid. (1860) 574–575; Merr., Enum. Philippine Pl. 1 (1922) 173; Engl. in A. & C. D.C., Monogr. Phan. 2 (1879) 93–94 & in Engl., Pflanzenr. 21(IV.23B) (1905) 42–43. — *Goniurus luzonensis* C. Presl, Epimel. Bot. (1851) 244. — Type: Philippines, Luzon, Albay Prov., 1841, *Cuming 1045* (PRG, holo; iso BM, E, G, K, L, LE, M, MO, P).

Slender to rather robust, (heterophyllous?), root-climbing liane. *Shoot system* architecture unclear; eocaul and seedling not observed; flowering shoot much abbreviated, (foliage) leafless. *Leaves* chartaceous to somewhat coriaceous, drying mid-green to brown with the mid-rib and (in larger leaves) primary venation yellowish; petiole 2–9 × 0.1–0.4 cm, slender, canaliculate, rounded abaxially, base decurrent, apex prominently geniculate, sheath distinct, prominent, erect, apically ligulate in young growth, ligule and sheath margins later scarious-disintegrating; blade 8–28 × 1–10 cm, narrowly to oblong or broadly falcate-elliptic, apex acuminate to long-falcate acuminate (the latter especially in broader leaves), apiculate, apicule later deciduous, base obtuse, largest leaves minutely peltate or, rarely, prominently cordate; primary lateral veins arising at 35–45°, 2 intramarginal veins per side, 2–15(–20) mm from blade margin, arising from just above base of the midrib, remaining ± parallel to margin, terminating at the tip of the blade. *Inflorescence* several to many together at different stages from a reiterating flowering shoot; peduncle 2.5–22 × 0.1–0.4 cm, rather slender, curving or straight. *Spathe* 2–6 × c. 1 cm, oblong to narrowly oblong, base rounded, annularly inserted on to peduncle, apex acuminate. *Spadix* stipitate; stipe 3–18 × 0.5–1 mm, terete; fertile portion 7–18 × 0.5–0.3 cm, slender-cylindric, straight to markedly zig-zagging. *Flowers* c. 1.8 mm diam., widely scattered, arranged in a lax spiral along the spadix sometimes on a low 'receptacle', with 6 free tepals and 6 stamens. *Infructescence* with few berries; fruit (immature) 6–9 × 4–6 mm, oblong-ellipsoid; seeds not observed. — **Fig. 47.**

Distribution — *Malesia*: endemic to the Philippines (Luzon and Samar).

Habitat — Dense hill to upper hill forest, 700–1100 m altitude.

Notes — The only goniurid *Pothos* in the Philippines and thus easy to identify as fertile material. It is most similar to *P. beccarianus* (Borneo) but separable by the falcate, oblique leaf blades, glabrous spadix and longer, narrow spathe.

Pothos luzonensis is very variable. Some populations tend towards having the individual flowers raised on a weak 'receptacle' whereas others have the flowers simply inserted on the spadix axis. In addition there are forms notable for narrow leaf blades and straight spadices and others (including the type) with wider leaves and zig-zagging spadices; the very largest leaves tending to prominently cordate bases, a rather rare condition in *Pothos*. Despite the extremes of variability, a range of intermediates occurs and the variability is not here considered to be of taxonomic significance.

Other specimens examined: **PHILIPPINES:** Luzon, Abra Prov., Massisiat, Mt Portoc, Sitio Garau, *Alcasid et al. PNH 1660* (A, K, PNH); Luzon, Bataan Prov., *Curran FB 5948* (US); Luzon, Ilocos Norte, Mt Semenublan, E of Neuva Era, *Iwatsuki et al. 234* (AAU, BKF, C, K, KYO, L, MO, PNH); Luzon, Ilocos Norte, Mt Semenublan, E of Neuva Era, *Iwatsuki et al. 243* (BKF, C, K, KYO, L, MO, PNH, SING); Luzon, Rizal, Montalban, *Loher 7036* (K, US); Luzon, Rizal, Montalban, *Loher 7037* (K, US); Luzon, Rizal, Balabac, *Loher BS 13067* (P); Luzon, Tayabas Prov., Kinatakutan, *Oro FB 30841* (SING); Luzon, Camarines Prov., *Ramos BS 1529* (A, BM, L, MO, SING); Luzon, Zambales Prov.,

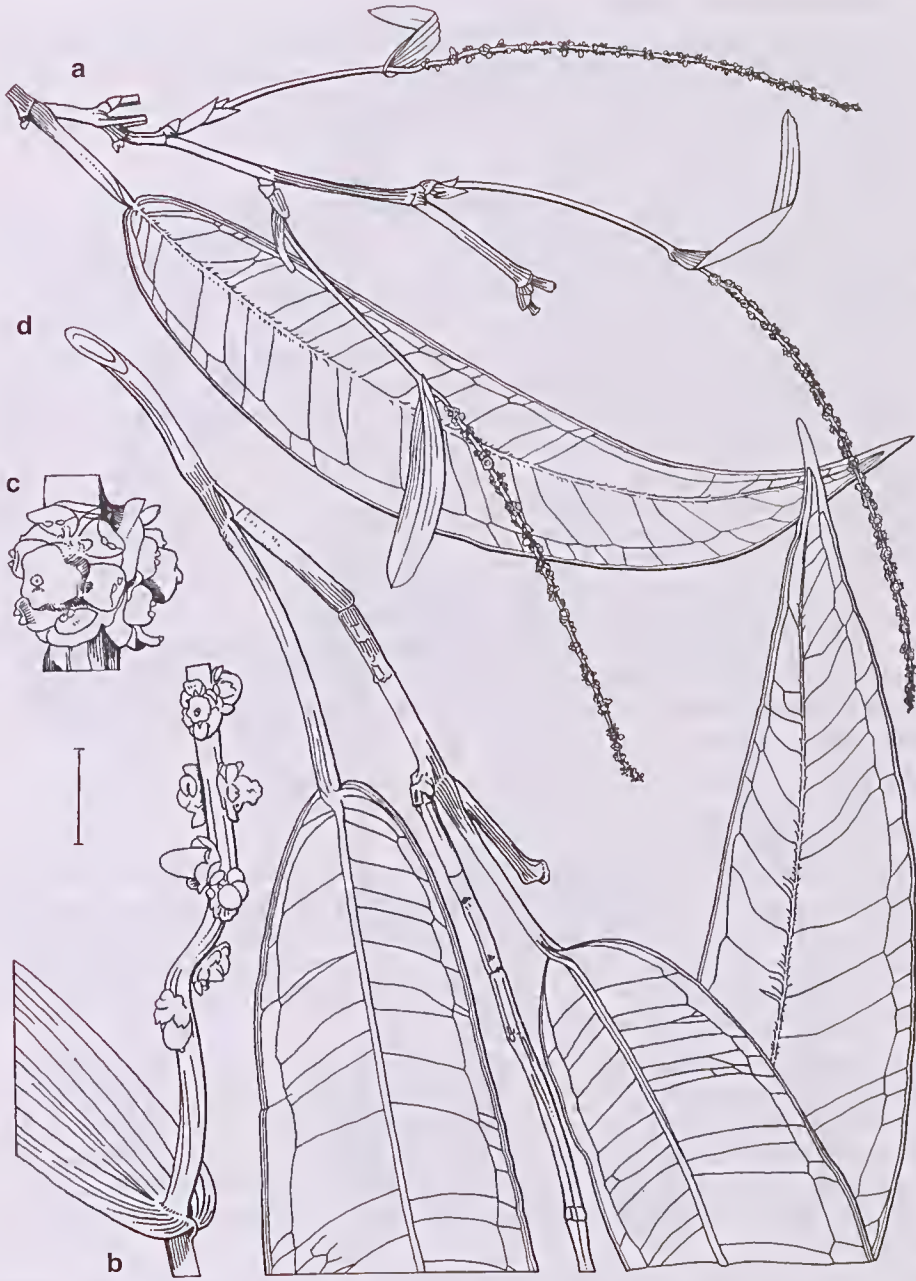


Fig. 47. *Pothos luzonensis*. a, fertile shoot; b, base of inflorescence; c, spadix detail; d, mature shoot detail: a-d, *Sulit* PNH 6399. Scale bar: a, d = 2 cm; b = 7 mm; c = 2.7 mm.

Mt Marangay, Ramos & Edaña BS 44533 (BO, L, LE, SING); Samar, Mt Catubig, Wright, Sulit PNH 6399 (L); Luzon, Ilocos Norte, Mt Tagki, Neuva Era, Veridinil & Regnoso PNH 121685 (K, PNH); Luzon, Camarines Prov., Mt Isarog, Vidal 3967 (A, K).

40. *Pothos motleyanus* Schott

Pothos motleyanus Schott, Aroideae (1856–1857) 25, t.55 & Prodr. Syst. Aroid. (1860) 574; Engl. in A. & C. DC, Monogr. Phan. 2 (1879) 94 ('*mottleyanus*') & in Engl., Pflanzenr. 21 (IV.23B) (1905) 42; Ridl., J. Straits Branch Roy. Asiat. Soc. 44 (1905) 187; Merr., J. Straits Branch Roy. Asiat. Soc., special ed. (1921) 87. — Type: 'Malaysia, Sabah, P. Labuan' *Motley 99* (K, holo). See notes below.

Rather robust, heterophyllous, root-climbing liane. *Shoot system* architecture unclear; eocaul not observed; seedling shingle-leaved; flowering shoot much abbreviated, (foliage) leafless, reiterating. *Leaves* stiffly coriaceous, very shortly ginger-tomentose abaxially, drying mid-brown with orange-brown abaxial surface; petiole 1.5–5 × 0.1–0.2 cm, stout, weakly canaliculate, rounded abaxially, apex prominently geniculate, sheath wide with two short, triangular ligules at tip, but soon degrading and not conspicuous in older portions of plant; blade 7–25 × 2–13 cm, narrowly to very broadly oblong-elliptic, oblique, falcate or not, apex acuminate, apiculate, base obtuse to slightly cordate; primary lateral veins arising at 70–85°, 2 intramarginal veins per side, 2–20 mm from blade margin, arising from just above base of the midrib, remaining ± parallel to margin, terminating at the tip of the blade. *Inflorescences* several together at different stages; peduncle 2–4 × 0.1–0.4 cm, slender, curving or straight, the inflorescence held erect to spreading, tending to become pendent into fruiting, *Spathes* 2.2–2.5 × 0.2–0.25 cm, linear, base rounded, annularly inserted on to peduncle, apex acuminate. *Spadix* stipitate; stipe 7–10 mm long, terete; fertile portion 6–9 × 0.1–0.2 cm, slender-cylindric, tomentose. *Flowers* c. 1.6 mm diam., widely scattered, arranged in a lax spiral each on a an expanded 'receptacle', with 6 free tepals and 6 stamens. *Infructescence* with few berries; fruit 8–11 × 5–6 mm, ellipsoid to oblong-ellipsoid; seeds not observed. — Fig. 48.

Distribution — *Malesia*: endemic to Borneo. See notes below.

Habitat — Not recorded.

Notes — *Pothos motleyanus* is immediately recognizable by stiffly coriaceous, abaxially ginger-tomentose leaf blades. It is one of three goniurid *Pothos* endemic to Borneo, the others are *P. beccarianus* (which has similar large inflorescences but with the flowers not raised on swollen pads, and thinly coriaceous leaf blades lacking the ginger-tomentose backs) and *P. oliganthus* (which is distinguishable by the considerably smaller and fewer-flowered glabrous inflorescences).

The only specimen with incontrovertible provenance is *Jaheri sub Exped. Nieuwenhuis 996* from Central Kalimantan. The type is annotated as (Pulau) Labuan, Sabah, but we have seen no further collections from Labuan and have not encountered this highly distinctive species in mainland Sabah, Brunei or Sarawak. It seems most probable that the type came from much further south in Borneo (see van Steenis (1950) for details of Barber and Motley collecting localities) and that *P. motleyanus* is endemic to Kalimantan.

Other specimens examined: BORNEO: KALIMANTAN: Further data and collector's name illegible, 574 (BO); C Kalimantan, Bk. Moang, *Jaheri sub Exped. Nieuwenhuis 996* (BO).

41. *Pothos oliganthus* P.C. Boyce & A. Hay, sp. nov.

Plerumque non rite in herbariis utpote *Pedicellarum paiei* agnitus est, sed inflorescentiis minutis perpaucifloris flores sessiles unoquoque receptaculo carenti ferentibus ac sepalis liberis statim distinguibilis. Coniunctio eadem characterum inflorescentiarum



Fig. 48. *Pothos motleyanus*. a, fertile shoot; b, spadix detail; c, lower part of adherent adult shoot; d, upper part of adherent adult shoot; e, shingle shoot: a-e, *Motley 99*. Scale bar: a, c, d = 2 cm; b = 1.6 mm.

etiam *P. oliganthum* ab omnibus ceteris speciebus generis *Pothi* separat. — Type: Malaysia, Sarawak, 2nd Div., Sri Aman, 85th mile, Ulu Sg. Silantek Kiri, path from G. Silantek, 26 Aug 1980, I. Paie S 42566 (K, holo; iso A, L, MO, SAN, SAR).

Slender, (heterophyllous?), root-climbing liane. *Shoot system* architecture unclear; eocaul and seedling not observed; flowering shoot much abbreviated (foliage) leafless. *Leaves* chartaceous to somewhat coriaceous, drying greenish brown; petiole 0.4–3 × 0.1–0.12 cm, slender, very narrow-canalicate, apex weakly geniculate, sheath distinct, prominent, erect, apically ligulate in young growth, ligule later disintegrating; blade 6–21 × 1–4.5 cm, very narrowly to narrowly elliptic, oblique, weakly falcate, apex long-acuminate, apiculate, apicule later deciduous, base obtuse; primary lateral veins arising at 60–70°, 2 intramarginal veins per side, 2–8 mm from blade margin, arising from just above base of the midrib, remaining ± parallel to margin, terminating at the tip of the blade. *Inflorescence* solitary, rarely several at different stages on a reiterating flowering shoot; peduncle 0.3–1.3 × 0.05–0.1 cm, very slender, pale green. *Spathe* c. 3 × 2 mm, oblong-ovate, cucullate, base rounded, apex acuminate, white. *Spadix* stipitate; stipe 1–7 mm long, terete; fertile portion 0.3–0.5 cm, very slender-cylindric, white. *Flowers* usually 3, seldom more than 5, per inflorescence, c. 1 mm diam., slightly scattered, with 6 free tepals and 6 stamens. *Infructescence* with few fruits; fruit (immature) 3–5 × 2–3 mm, obclavate ellipsoid; seeds not observed. — Fig. 49.

Distribution — *Malesia*: endemic to Borneo (E & S Sarawak).

Habitat — Mixed lowland to hill dipterocarp forest or kerangas on slopes and ridges, 300–540 m altitude.

Note — Frequently misidentified in herbaria as *Pedicellarum paiei* (q.v.) but immediately distinguishable by the very small, very few-flowered inflorescences bearing sessile flowers lacking a receptacle, and the free tepals. This same combination of inflorescence characters also serves to separate *P. oliganthus* from all other species of *Pothos*.

Other specimens examined: BORNEO: SARAWAK: 3rd Div., Belaga, Linau, Sg. Iban, Lee S 45534 (K, L, MO, SAN, SAR, US); 1st/2nd Div. Boundary, G. Buri, 75th mile, Martin & Ismawi S 36660 (K, KEP, L, MO, SAR, US); 1st Division, Bk Buri, Paie S 42082 (K, L, SAN, SAR, US).

Pedicellarum

Pedicellarum M. Hotta, Acta Phytotax. Geobot. 27 (1976) 61–65; Nicolson, Aroideana 7 (1984) 56–57; Mayo et al., Genera of Araceae (1997) 100, pl.6, pl. 108B. — Type: *Pedicellarum paiei* M. Hotta.

Rather slender rarely secondarily hemi-epiphytic (see Croat 1990: 11; Putz & Holbrook 1986), root climbing, heterophyllous, liane. *Shoot system* weakly differentiated into adherent, physiognomically monopodial (see Boyce 1998, Boyce & Nguyen 1995, Boyce & Poulsen 1994, Boyce & Hay 1998, Boyce 2000, Hay 1995) non-flowering shoots and free, sympodial fertile shoots, inflorescences arising from highly ramified, abbreviated shoots arising from beneath the leaf; seedling a cataphyll-bearing but otherwise leafless, photosynthesising thread-like eocaul; adult plants producing flagelliform, leafless (cataphyll-bearing), skototropic, foraging shoots; juvenile plants shingle-leaved; internodes (except at the beginning of branches) much longer than thick. *Leaf blades* simple, entire, narrowly lanceolate to elliptic, even-sided to slightly asymmetrical, with reticulate venation, the primary lateral veins on each side of the midrib traversed by two intramarginal veins running ± from the base and from about midway along the midrib to the apex, or first to the distal margins and then to the

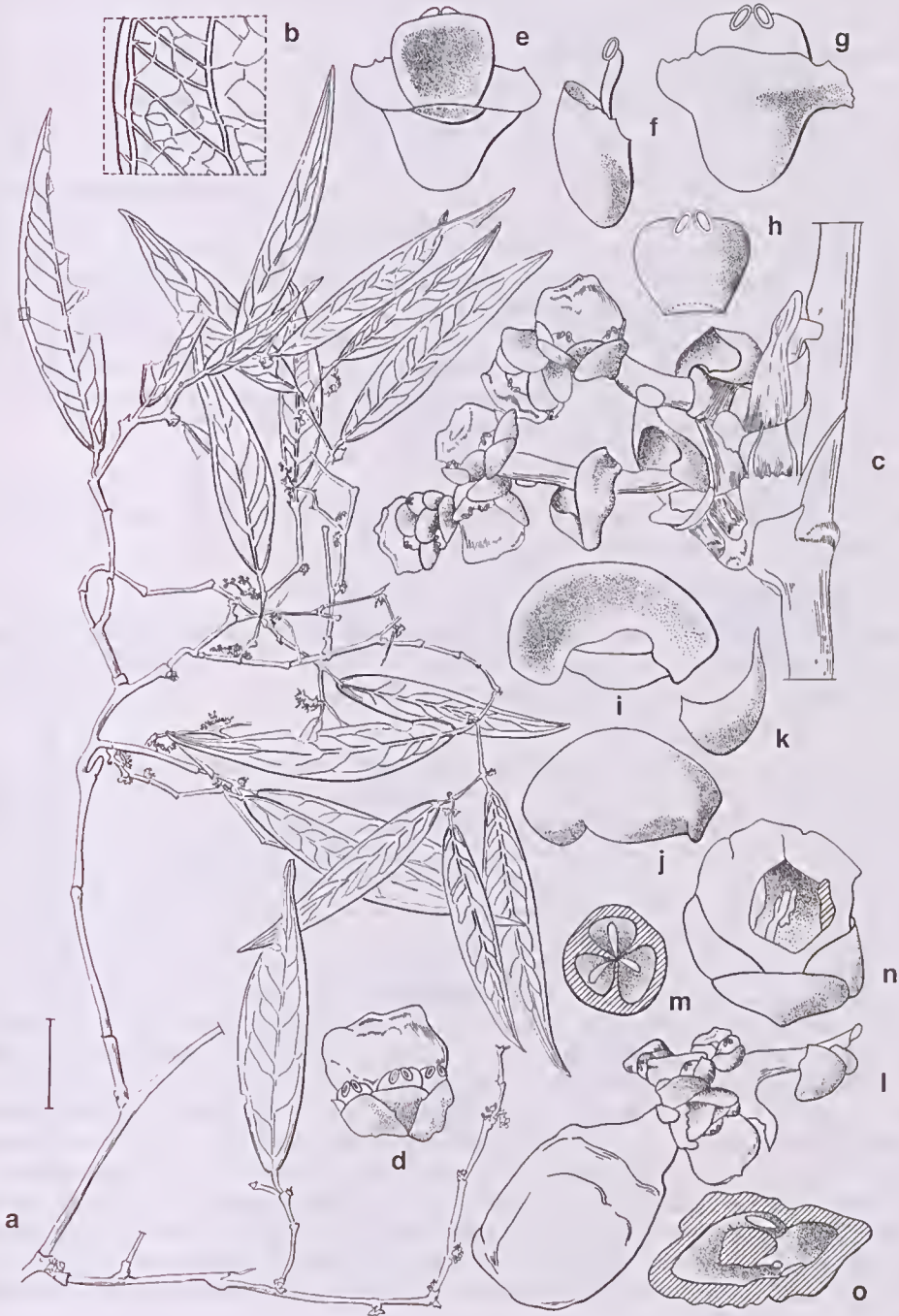


Fig. 49. *Pothos oliganthus*. a, fertile shoots; b, venation detail; c, inflorescences; d, whole flower, side view; e, tepal and stamen, inside view; f, tepal and stamen, side view; g, tepal and stamen, outside view; h, stamen, ventral view; i, tepal, bottom view; j, tepal, top view; k, tepal, side view; l, inflorescence; m, ovary, transverse section; n, ovary, window cut into side, tepals in place; o, fruit, transverse section: a–o, *Paie S 42566*. Scale bar: a = 3 cm; b, c, l = 2.2 mm; d & o = 1.7 mm; e–h, m, n = 1.1 mm; i, j, k = 0.8 mm.

apex; petiole with a narrow, \pm clasping sheath and a conspicuous apical geniculum. *Inflorescences* arranged on lateral short shoots bearing cataphylls and elaborated by sympodial branching into leafless, highly complex, compact synflorescences bearing two to many inflorescences flowering in series, synflorescences borne along leafy branches or on older leafless parts of the stem, sometimes arising from there. *Spathie* inconspicuous, ovate, opening wide and held away from the spadix, green to yellow. *Spadix* long-stipitate, axis flexuose, minutely hispid-papillose. *Flowers* bisexual, scattered, on short pedicels, with a large and conspicuous receptacle, and a perianth of 6 completely united tepals forming a cup-like structure; stamens 6, free, with broad, flattened, filaments and latrorse anthers, thecae ellipsoid ovary trilobular, the locules uniovulate, ovules anatropous on an axile placenta at the base of the septum; stigma umbonate, sessile. *Fruit* a 1–3-seeded elongate oblong-ellipsoid berry ripening from green through yellow to bright red, individually distinct and (relative to spadix) very large; seeds large, exalbuminous compressed-ellipsoid, testa smooth, thin, embryo macropodal. *Pollen* monosulcate, ellipsoid-oblong, small [mean 17 μm (Grayum 1984, 1992)], exine reticulate, minutely muri-tuberculate. *Chromosomes*: not recorded.

Distribution — One species; endemic to Borneo.

Habitat — Primary to disturbed secondary lowland to upper hill forest on slopes or river banks, 150–1000 m altitude.

42. *Pedicellarum paiei* M. Hotta

Pedicellarum paiei M. Hotta, Acta Phytotax. Geobot. 27 (1976) 61–65; Nicolson, Aroideana 7 (1984) 56–57; Mayo et al., Genera of Araceae (1997) 100, pl.6, pl.108B. — Type: Malaysia, Sarawak, 9th Div., Serian, G. Penrissen, 3 May 1962, *I. Paie* S 16354 (KYO, holo; iso K, L, SING).

Slender, heterophyllous, root-climbing liane. *Shoot system* differentiated into non-flowering adherent and free, lateral flowering stems; cocaul not observed seedling shingle-leaved; flowering shoot much abbreviated, (foliage) leafless. *Leaves* stiffly chartaceous, mid-green, paler abaxially, drying mid-green to brown; petiole 1–2 \times 0.1–0.2 cm, slender, very narrowly canaliculate, apex geniculate, sheath very indistinct; blade 5–16 \times 1.5–5 cm, broadly to narrowly elliptic or ovate-elliptic, apex acuminate to long-acuminate, straight to markedly falcate, apiculate, apicule later deciduous, base subacute to obtuse; primary lateral veins arising at 60–70°, 2 intramarginal veins per side, 2–6 mm from blade margin, arising from just above base of the midrib, remaining \pm parallel to margin, terminating at the tip of the blade. *Inflorescence* solitary to rarely paired; peduncle 6–8 \times c. 0.1 mm, very slender, straight, the inflorescence held erect to spreading, greenish yellow. *Spathie* 4–6 \times c. 4 mm, ovate, base rounded, annularly inserted on to peduncle, apex acuminate, greenish yellow. *Spadix* stipitate; stipe 3–4 \times c. 0.9 mm, terete; fertile portion 2–3.5 \times c. 0.15 cm, slender-cylindric, prominently zig-zagging, greenish yellow. *Flowers* 5–11 per inflorescence, c. 2 mm diam., widely scattered, briefly stipitate, arranged in two rows along the spadix with a prominent receptacle, 6 fused tepals forming a cup and 6 free stamens. *Inflorescence* with few berries (but generally each flower fertile); fruit 6–13 \times 4–6 mm, elongate oblong-ellipsoid with a prominently truncate apex; seeds elongate-ellipsoid, 4–6 \times 3–4 mm. — Fig. 50.

Distribution — As for genus.

Habitat — As for genus.

Note — Much material in herbaria hitherto annotated as *Pedicellarum paiei* is referable to *Pothos oliganthus* (see above), despite *Pedicellarum* being immediately distinguishable by the larger, more floriferous inflorescences, stipitate receptacled flowers and the cup-like structure formed by the fused tepals.

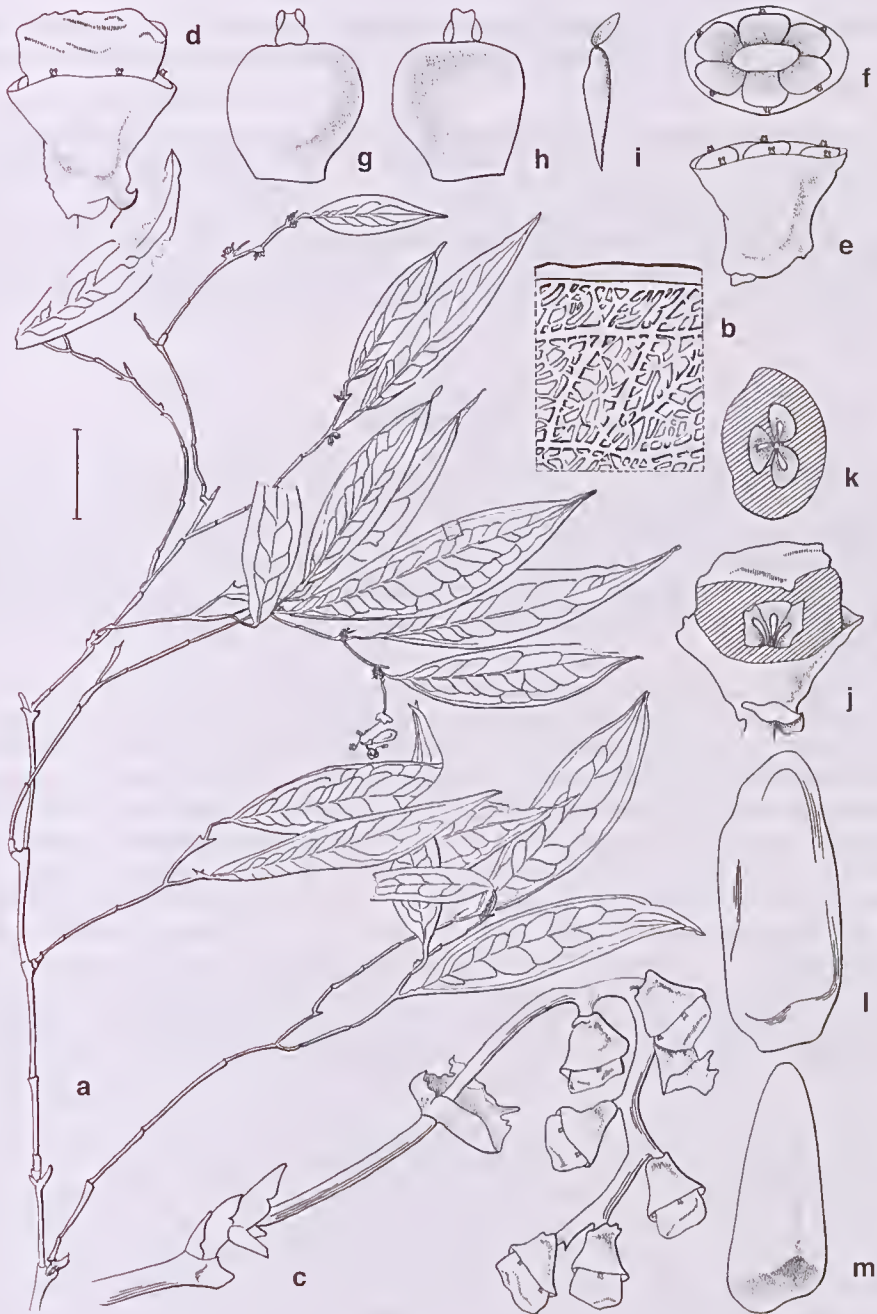


Fig. 50. *Pedicellarum paiei*. a, fertile shoots; b, venation detail; c, inflorescence; d, whole flower, side view; e, fused tepals, stamen just visible, side view; f, fused tepals, stamens visible, top view; g, stamen, inside view; h, stamen, out view; i, stamen, side view; j, whole flower, ovary longitudinally sectioned; k, ovary, transverse section; l, berry, side view; m, berry, rear view: a-m, Church *et al.* 1014. Scale bar: a = 3 cm; b = 1.7 mm; c, l, m = 5 mm; d-f, j, k = 3.3 mm; g-i = 0.5 mm.

From the scattered provenances of available collections it is quite probable that *Pedicellarum paiiei* is not a rare species and is more likely simply overlooked.

[A combination for this species in *Pothos* has been made by Grayum (1984: 634; 1992) but was not effectively published; the argumentation presented by Grayum is based on (misidentified) *P. oliganthus*.]

Other specimens examined: BORNEO: SARAWAK: 1st Div., Matang N.P., Ulu Sg. Rayu, *Ismawi* S 54080 (K, KEP, L, SAN, SAR, US); 1st Div., Bau, Kubah N.P., ridge leading from main road, c, 2 km from park entrance, *Boyce* 782 (K, M, SAR); 1st Div., G. Matang, 'Native collector' 5178 (UCL). SABAH: Nabawan, Syt. Benawood, Sg. Maadun, *Krispius* SAN 104271 (SAN); Sandakan, Ulu Sg. Pinangah, *Lassan* SAN 107216 (K, SAN). KALIMANTAN: W Kalimantan, Sintang, Bk. Baka N.P., along Sg. Ella, *Church et al.* 303 (A, BO, K); W Kalimantan, Sintang, HPH km 69-73, W of camp off main (new) logging road, *Church et al.* 1014 (A, BO, K); CE Kalimantan, W Kutai, no. 28, near Long Liah Leng, *Endert* 2942 (BO, K, L).

Pothoidium

Pothoidium Schott, Oesterr. bot. Wochenbl. 7 (1857) 70 & Aroideae 6 (1856-1857) 26, t.57 & Gen. Aroid. (1858) 96 & Prodr. Syst. Aroid. (1860) 575-576; Engl. in A. & C. DC, Monogr. Phan. 2 (1879) 94-95; Benth. & Hook.f., Gen. Pl. 3(2) (1883) 999; Engl. & Prantl, Nat. Pflanzenfam. T.2, Ab.3 (1889) 114-115; Engl. in Engl., Pflanzenr. 21 (IV.23B) (1905) 44-46, fig.18; Merr., Enum. Philippine Pl. 1 (1922) 174; Elmer, Leaf. Philippine Bot. 10(133) (1938) 3627; Mayo et al., Genera of Araceae (1997) 100, pl.7. — Type: *Pothoidium lobbianum* Schott.

Large, slender to robust, root climbing, homeophyllous, tough, fibrous lianes. *Shoot system* usually clearly differentiated into adherent, physiognomically monopodial (see Boyce 1998, Boyce & Nguyen 1995, Boyce & Poulsen 1994, Boyce & Hay 1998, Boyce 2000, Hay 1995) non-flowering shoots and free, physiognomically monopodial pendent, flowering shoots; juvenile plants with leaves as for adults but much smaller and more congested; internodes (except at the beginning of branches) much longer than thick. *Leaf blades* simple, entire, narrowly lanceolate to broadly ovate, with reticulate venation, the primary lateral veins on each side of the midrib traversed by one or more intramarginal veins running \pm from the base and from about midway along the midrib to the apex, or first to the distal margins and then to the apex; petiole broad, flattened and lamina-like with a small apical articulation, the leaf resembling that of some *Citrus*. *Inflorescences* several to many, borne in a terminal branching system, lower inflorescences axillary to a foliage leaf, upper ones either subtended by a cataphyll or without a subtending leaf, peduncular axis slender, composed of one to several internodes, sometimes subtended by a prophyll, sometimes also bearing a cataphyll \pm halfway up. *Spathe* occurrence irregular, often absent, linear-lanceolate, widely spreading, margins usually revolute. *Spadix* apparently often functionally unisexual, cylindrical, sessile to long-stipitate when subtended by spathe. *Flowers* apparently usually unisexual, sometimes bisexual, congested, with a perianth of 6 free tepals; male flowers with well developed anthers and apparently sterile ovary; female flowers with large fertile ovary and lacking stamens; stamens 3-6, free, number often varying on a single spadix, filaments broad, flattened, anthers extrorse, thecae short, ellipsoid, dehiscing by a broad slit; ovary 1-locular, ovule 1, anatropous on a sub-basal placenta; stigma discoid-hemispheric. *Fruit* a 1-seeded berry, individually distinct and large relative to size of spadix; seed large, exalbuminous, testa smooth; embryo macropodal. *Pollen* monosulcate, ellipsoid-oblong, medium-sized [mean 26 μ m. (Grayum 1984, 1992)], exine reticulate, muri-psilate, apertural exine shallowly fossulate or verrucate. *Chromosomes*: $2n = 24$ (Petersen 1989).

Distribution — One species in the Philippines, Sulawesi, Maluku and Taiwan (Lanyu Island).

Habitat — Primary to disturbed lowland to hill forest on a variety of substrates including clays and volcanic-derived soils, 30–500 m altitude.

43. *Pothoidium lobbianum* Schott

Pothoidium lobbianum Schott, Oesterr. Bot. Wochenbl. 7 (1857) 70. — Type: Philippines, Luzon, Manila, *Lobb s.n.* (K, holo).

Slender to robust, high root-climbing liane. *Shoot system* well-differentiated into adherent, climbing shoots and free, lateral flowering branches; eocaul not observed; seedling with congested leaves similar in shape to adult, but with blade elliptic and as long as petiole, becoming progressively larger as shoot extends. *Leaves* mid-green above, slightly paler below, drying variously dull green to orange-brown; petiole 4–17.5 × 0.4–2 cm, greatly exceeding the blade in length, oblanceolate, distally rounded to truncate to auriculate; blade (0–)1–6 × 0.3–1.5 cm, elliptic to narrowly triangular-lanceolate, somewhat acute, base rounded to truncate; primary lateral veins very obscure, diverging at c. 30–40°, intramarginal veins nearly invisible, 2 (or 3) on each side of the midrib. *Inflorescences* several to many, borne in a terminal branching system on either the primary or subsidiary (in which instance primary inflorescence system often accompanied by two or more subsidiary systems) tips of long pendent shoots, branching system 9–41 cm in total length, lower inflorescences axillary to a foliage leaf, upper ones either subtended by a cataphyll or without a subtending leaf; peduncular axis slender to very stout, composed of one to several internodes, sometimes subtended by a prophyll, sometimes also bearing a cataphyll ± halfway up; peduncle slender, 1–2 cm long. *Spathes* 2–3 × 0.2–0.4 cm, ± lorate-lanceolate, spreading to slightly reflexed, greenish white. *Spadix* long stipitate to sessile; stipe 0–3.5 cm long; fertile portion 1–6 × 0.2–0.4 cm, slender to rather stoutly cylindrical, pale green. *Flowers* c. 1.3 mm diam., with 6 free tepals and 6 stamens. *Inflorescences* with many berries; fruit 0.8–1.1 × 0.5–1 cm, globose-oblong to obovoid, bright red when ripe; seeds ellipsoid, c. 1 cm × 6 mm, mid-brown. — Fig. 51.

Distribution — As for genus.

Habitat — As for genus.

Note — Unique in the Araceae in the structure of the inflorescence system; fertile material is unlikely to be confused with any other species. Nevertheless, *Pothoidium lobbianum* is not infrequently collected as *Pothos cylindricus*, a species with strikingly similar vegetative appearance that occurs sympatrically with *Pothoidium lobbianum* in the Philippines.

Other specimens examined: PHILIPPINES: Luzon, Cagayan Prov., Callao vicinity of Peñablanca, *Adduru 65* (A, MO); Luzon, Cagayan Prov., Littoc, vicinity of Peñablanca, *Adduru 114* (A, MO); Luzon, Cagayan Prov., Laguna, vicinity of Peñablanca, *Adduru 199* (A, K, MO, US); Luzon, Cagayan Prov., Peñablanca, *Bolster 123* (MO); Luzon, Bataan Prov., Lamao River, Mt Mariveles, *Borden FB 3053* (K, US); Luzon, Isabela Prov., Palanan, San Isidro, Sierra Madre Mts. E foothills, NW of Diago, c. 1.5 km SSE of Palanan Point, *Leonardo Co 3512* (A, K, KEP, L, PNH, US); Luzon, Camarines Sur Prov., Mt Isarog, *Convocar 2901* (MO); Luzon, Quezon N.P., *Croat 52994* (MO); Luzon, Benguet Prov., Kias, *Elmer 6435* (K, US); Mindanao, Agusan Prov., Cabadbaran (Mt Urdaneta), *Elmer 13444* (BM, K, MO, US); Luzon, Sorsogon Prov., Irosin (Mt Bulusan), *Elmer 14429* (BM, K, MO, US); Luzon, Laguna Prov., Los Baños (Mt Maquiling), *Elmer 17887* (K, MO, US); Mindoro, Mindoro Orientale, Pola River, *Féniç BS 28231* (PNH); Luzon, Apayao, *Gutierrez et al. PNH 117267* (BM); Luzon, *Haenke s.n.* (B); Luzon, *Jager s.n.* (B); Luzon, Rizal, Montalban, *Loher 2462* (K, US); Luzon, Rizal Prov., Montalban, *Loher 7046* (K); Luzon, Rizal Prov., Montalban, *Loher 7047* (K, US); Biliran, *McGregor BS 18538* (MO); Luzon, Quezon Prov., Hinabaaan, Guinayangan, *Mendoza*



Fig. 51. *Pothoidium lobbiannum*. a, habit; b, detail of leaf blade and petiole venation; c, infructescence; d, detail of basal portion of spadix; e, flower, top view; f, flower, one tepal removed; g, gynoecium, longitudinal section. a–b, *de Vogel* 3866 (K); c, *Loher* 7047 (K); d, *Merrill* 2293 (K & Kew spirit collection 58025); e–g, *Herb. Lugd. Bat.* (K). Scale bar: a = 3 cm; b = 1 cm; c = 1,3 cm; d = 4 mm; e–g = 0.7 mm.

PNH 97846 (K, PNH); Luzon, Tanay, Morong, *Merrill* 2293 (K, US); Albay Prov., Mt Malinao Tuui, *Mucado* 1670 (K); Samar, 4 km W of Bagacay Barrio, about 20 km W of Wright, along Ulat River, *Nicolson* 802 (B, K, US); Negros, Negros Orientale, Mt Canlaon, above Canlaon, *Nicolson* 831 (US); Luzon, Rizal Prov., Bosoboso, *Ramos BS* 1015 (US); Luzon, Batangas Prov., *Ramos BS* 1831 (BM, MO); Samar, Catubig River, *Ramos BS* 24304 (US); Batan, Batanes Prov., Mt Iraya, *Ramos BS* 80257 (K); Luzon, Cavite Prov., *Ramos & Deroy BS* 22535 (K, US); Mindoro, Mindoro Orientale, Pola River, *Reed PNH* 170249 (PNH); Luzon, Camarines Norte, Basud, Tuaca, Mt Nilisan, *Reynoso et al. PPI* 1228 (PNH, US); Luzon, Camarines Norte, Basud, Tuaca, Mt Nilisan, *Reynoso et al. PPI* 1305 (PNH, US); Luzon, Camarines Sur Prov., Bicol N.P., c. 1 km from Mapolidan, *Sinclair* 9530 (E, PNH, SING); Luzon, Bataan Prov., Morong, tractor road from Morong to Mt Natib, above Refugee Camp and Morong River, *Soejarto et al.* 7771 (K, MO, PNH); Luzon, Laguna Prov., Los Banos, *Steiner* 512 (PNH, US); Luzon, Sorsogon Prov., Mt Bulusan, *Sulit PNH* 3630 (MO); Mindoro, Mt Yagaw, E slope, *Sulit & Conklin PNH* 17686 (BM, K); Luzon, Rizal Prov., Bosoboso, Morong, *Vidal* 3965 (K); Mindanao, Butuan, *Weber* 1049 (US); Leyte, *Wenzel* 510 (BM, E, MO, US); Leyte, *Wenzel* 992 (BM, MO); Surigao, *Wenzel* 3013 (K, MO); Mindanao, Butuan, *Wester BS* 19355 (US); Luzon, Bataan Prov., Lamao River, Mt Mariveles, *Whitford* 503 (K, US); Mindanao, Davao Prov., Santa Cruz, *Williams* 2936 (US). **SULAWESI:** Minahassa, G. Tetawiran, *Alston* 16403 (BM, BO); Sulawesi Utara, 220 km W of Manado, 50 km inland from Pangi, on Sg. Ilanga, *Burley et al.* 3599 (A, BO, E, K, KEP, MO, US); Sulawesi Utara, 220 km W of Manado, 50 km inland from Pangi, tributary of Sg. Ilanga, *Burley et al.* 3738 (A, BO, K, US); Sulawesi Utara, Bolaang Mongondo, between Pinogaluman and Pindol, *de Vogel* 2552 (BO, L, US); Sulawesi Utara, Bolaang Mongondow, Dumoga Bone N.P., Toraut Dam, along Toraut River, *de Vogel & Vermeulen* 6599 (BO, K, L, US); Minahassa, *Koorders* 16135 (BO, K, L); Minahassa, *Koorders* 16140 (BO, K, L); Sulawesi Utara, Dumoga Bone N.P., Toraut, beside Sg. Tumpah, *Martin s.u.* (BM); Sulawesi Utara, Dumoga Bone N.P., *Whitmore & Sidiyasa* 3422 (BO, K). **MALUKU:** N Maluku, Akelamo, N of Djailolo, *Alston* 16897 (BM, BO); N Maluku, Halmahera, G. Jailolo, *de Vogel* 3499 (BO, K, L, MO); N Maluku, Bacan Is., near Amasing Kali, *de Vogel* 3866 (BO, K, L, MO).

Insufficiently known species

44. *Pothos longus* Ridl., J. Straits Branch Roy. Asiat. Soc. 44 (1905) 188. — Type: Malaysia, Sarawak, 1st Div., four miles from Kuching, *Haviland* 934 (not found).

Note — There is no material of this collection in SING, and we have been unable to locate a specimen in any of the herbaria to which Haviland is supposed to have sent duplicates. Ridley's description of *P. longus* implies that it is very close to, if not identical with, *P. mirabilis*; if the latter proves to be true, the name *P. longus* has priority.

Doubtful species

Pothos sanderianus Hort., Gard. Chron. n.s. 21 (1884) 711.

Pothos nitens W. Bull. Cat. 1887 (1887) 11.

The descriptions of both are too vague to enable identification and it is not even clear that they are of *Pothos* plants; it is possible that they are Piperaceae. No types were cited and no authentic material has been located.

Newly excluded species

Pothos latifolius L.

Pothos latifolius L. in Stickman, Herb. Amboin. (1754) 25. [— *Pothos macrostachyus* Moritz, Syst. Verz. (1846) 83; Schott, Prodr. Syst. Aroid. (1860) 572, nom.superfl. pro *P. latifolius* L.]. — *Pothos tener* Schott, Aroideae 1 (1856–7) 24 & Prodr. Syst. Aroid. (1860) 572; Engl. in A. & C. DC, Monogr. Phan. 2 (1879) 94, nom. illeg. non Wall. (1820). — Type: *Adpeudix arborum* Rumph., Herb. Amb. 5 (1747) t. 181, fig.1, see below. = *Piper* sp. (Piperaceae).

Linnaeus cited Rumphius' plate of *Adpendix arboriuu* (Herb. Amb. 5, t. 181, fig. 1 & 2) in its entirety in publishing *P. latifolius*. However, and contrary to the interpretation by Merrill (1917), the plate depicts two distinct species. Rumphius' Fig. 1 shows an inflorescence with no spathe and none of the distinctively conspicuous *Pothos* fruits. The absence of distinct fruits suggests that the inflorescence, if of *Pothos*, is at anthesis, in which case a spathe is to be expected. Consequently we came to suspect that the plant depicted is not *Pothos*. More conclusively, Rumphius described the fruit [sic] of this plant as being finger-like and 4–5 inches long. This firmly places this plant outside *Pothos*, but is compatible with the aggregate infructescences of some *Piper* species, in which the habit is often similar to that of *Pothos*. (Leaf venation is quite different, but it is not depicted in the illustration.) We therefore exclude Fig. 1 from Araceae. In publishing *Pothos tener* Wallich (see earlier) for Roxburgh's illegitimate *Pothos gracilis* (non Aublet), only figure 2, which clearly is *Pothos*, was explicitly cited. In doing so Roxburgh implicitly lectotypified Linnaeus' *P. latifolius* on figure 1 of Rumphius' plate, here confirmed. We therefore exclude *Pothos latifolius* L. from Araceae.

Publishing *Pothos macrostachyus*, Moritzi cited Linnaeus' type concept of *P. latifolius* as a synonym. *Pothos macrostachyus* is here treated as a homotypic synonym of *P. latifolius* L. and excluded from Araceae.

Previously excluded species

- Pothos argenteus* W.Bull = *Scindapsus pictus* Hassk.
Pothos argyraeus Engl. = *Scindapsus pictus* Hassk.
Pothos aureus Linden & André = *Epipremnum pinnatum* (L.) Schott 'Aureum'
Pothos bifarinus Wall. ex Hook.f. = *Rhaphidophora korthalsii* Schott
Pothos caudatus Roxb. = *Epipremnum pinnatum* (L.) Engl.
Pothos celatocaulis N.E.Br. = *Rhaphidophora korthalsii* Schott
Pothos cuscuaria Aubl. = *Scindapsus cuscuaria* (Aubl.) C. Presl
Pothos decursivus Roxb. = *Rhaphidophora decursiva* (Roxb.) Schott
Pothos decursivus Wall. = *Epipremnum pinnatum* (L.) Engl.
Pothos euderianus N.E.Br. = *Scindapsus treubii*
Pothos gigautens Roxb. = *Epipremnum giganteum* (Roxb.) Schott
Pothos glaucus Wall. = *Rhaphidophora glauca* (Wall.) Schott
Pothos hederaceus Zoll. & Moritzi = *Scindapsus hederaceus* Miq.
Pothos heterophyllus Roxb. = *Lasia spinosa* (L.) Thwaites
Pothos lasia Roxb. = *Lasia spinosa* (L.) Thwaites
Pothos miniatus Zipp. ex Schott = *Amydrium zippelianum* (Schott) Nicolson
Pothos monopetalus Reinw. ex Miq. = *Anadendrum microstachyum* (de Vriese & Miq.) Backer & Alderw.
Pothos obliquus Wall. ex Hook.f. = *Rhaphidophora hongkongensis* Schott?
Pothos officinalis Roxb. = *Scindapsus officinalis* (Roxb.) Schott
Pothos paucinervis Ridl. = *Anadendrum* sp.
Pothos peepla Roxb. = *Rhaphidophora peepla* (Roxb.) Schott

Pothos pertusus Roxb. = *Rhaphidophora pertusa* (Roxb.) Schott

Pothos pinnatifidus Roxb. = *Epipremnum pinnatum* (L.) Engl.

Pothos pinnatus L. = *Epipremnum pinnatum* (L.) Engl.

Pothos pipila Schult. = *Rhaphidophora peepla* (Roxb.) Schott

Pothos spinosus (L.) Buch.-Ham. ex Wall. = *Lasia spinosa* (L.) Thwaites

Pothos wallichii Steud. = *Rhaphidophora glauca* (Wall.) Schott

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<i>maingayi</i> Hook.f.	547	<i>scandens</i> L. var. <i>javanicus</i> de Vriese	
<i>melaleucooides</i> Furtado	518	474
<i>merrillii</i> K. Krause	497	<i>scandens</i> L. var. <i>macrospadix</i> Buchet	
<i>microphyllus</i> C. Presl	462	463
<i>mirabilis</i> Merr.	523	<i>scandens</i> L. var. <i>sumatranus</i> de Vriese	
<i>motleyanus</i> Schott	552	462
<i>nigrescens</i> Zipp. ex Miq.	481	<i>scandens</i> L. var. <i>zeylanicus</i> de Vriese ..	462
<i>nitens</i> W. Bull	561	<i>scandens</i> L. var. <i>zollingerianus</i> (Schott)	
<i>nosibeensis</i> Buchet	463	Engl.	462
oliganthus P.C. Boyce & A. Hay	552	<i>sumatranus</i> Engl. non Miq.	511
<i>ovatifolius</i> Engl.	497	<i>sumatranus</i> Miq.	527
<i>ovatifolius</i> Engl. var. <i>simalurensis</i> Alderw.		<i>tener</i> Wall.	490
<i>oxyphyllus</i> Miq.	527	<i>teuer</i> Schott	461
<i>papuanus</i> Becc. ex Engl.	483	<i>versteegii</i> Engl.	479
<i>penicilliger</i> Gagnep.	506	volans P.C. Boyce & A. Hay	423
<i>peninsularis</i> Alderw.	547	<i>vrieseanus</i> Schott	474
<i>peninsularis</i> Elmer	508	<i>wallichii</i> Hook.f.	521
<i>philippinensis</i> Engl.	508	<i>zippelii</i> Schott	481
<i>polystachyus</i> Engl. & K. Krause	540	<i>zollingeri</i> Schott	462
<i>quinquevenosus</i> Alderw.	483	<i>zollingerianus</i> Schott	462
<i>ridleyanus</i> Furtado	515	<i>Scindapsus arborum</i> C. Presl	490
<i>roxburghii</i> de Vriese	462	<i>inaequilaterus</i> C. Presl	530
<i>rumplii</i> Schott	490	<i>rumplii</i> (Schott) C. Presl	490
		<i>teuer</i> (Wall.) C. Presl	490